

PLANET

#November 2020



SUPPORTING THE RECOVERY

FORUM

The health crisis' impact on business: how can we build a more sustainable recovery?

FRONTLINE

Moving mountains in China's medical waste business

OUTFRONT

Veolia's digitalization with a human face

EXPLAINER

VIGIE COVID-19: better monitoring the epidemic's resurgence

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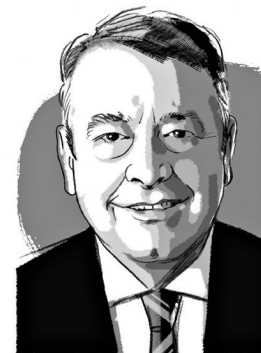
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Cover photo: François Moura.

WE NEED TO CHANGE SCALE TO RESPOND TO THE ECOLOGICAL EMERGENCY!



ANTOINE FRÉROT
CEO of Veolia

"We need to change scope to respond to the ecological emergency!" With this injunction, Jean Haëntjens, winner of our 2020 Environment Book Prize, appealed to readers of the work *Comment l'écologie réinvente la politique* [How ecology is reinventing politics], which received the award on September 12 and which I recommend reading. I entirely agree with this slogan and would opportunely add that to respond to the ecological emergency, we also have to change scale! In any event, this is the belief driving our merger project with the Suez group: it is high time to join forces in order to continue to blaze a trail in our areas of expertise and bring about a radical change for the planet over the next twenty years.

If we want to rise to the environmental challenges facing us, we are going to have to invest heavily, both to bring existing solutions into the mainstream as well as develop all those solutions waiting to be invented. And not only invest but also pool our knowledge, know-how and technologies. The years to come must be marked by an intense collective effort to conquer a new frontier: ecological transformation.

Among these solutions, which will be added to our existing service offering, I'm thinking of carbon capture and then its use to replant soils, recycling hard plastics, or recovering the rare earths and metals that make up electric batteries, whose use is continuing to develop apace. It will also be necessary to guarantee the air quality in all buildings welcoming the public, and think about new farming practices to feed ten billion humans using less water, energy and space.

A few months ago now, as part of our purpose, we established our company's road map for the decades to come, which can be summarized as

follows: preparing for the future, protecting the environment, and responding to humanity's vital needs. Behind this noble ambition lies the continuation of the work of the Hygienists who invented our areas of expertise in the mid-19th century, already with a sense that the hygiene — cleanliness — of our environment was a public health lever and a factor of prosperity. Creating with Suez — the great world champion of ecological transformation — is at once a way of remaining true to this purpose, accelerating the road map that we have set ourselves, and, as it were, walking in the footsteps of our two groups' founders, who in their day were able to innovate for the common good of humanity. Guided by the same obsession with human progress that drove them to revolutionize water treatment 170 years ago, together we will lead the ecological transformation revolution.

2020 is undoubtedly a year unlike any other. A disruptive year for the planet, conversely it must be a year of coming together for all those who can help "reconcile human beings with nature," as the ecologist Julia Marton-Lefèvre enjoins us in "And tomorrow: double or nothing for ecology?," the series of interviews that accompanied our lockdown. The coronavirus crisis must be a wake-up call for us all: the countdown is ticking, and if we — French-born companies and Europeans at heart — want to be involved in the battle for ecological solutions, the time for being scattered is long past. Let's answer the call right away and, together, let's build the post-2020 group for the post-2020 world!





BUILDING THE GROUP OF TOMORROW FOR THE WORLD OF TOMORROW

The intention to bring Veolia and Suez together is perfectly in line with our Purpose and our Impact 2023 program: it opens up the possibility to create a worldwide player capable of meeting the challenges of ecological transformation, while maximizing our impact for all our stakeholders. This development will also enable us to seize the huge potential offered by environmental markets.

A world champion of ecological transformation

In creating the world champion of ecological transformation with Suez we would become the first company in the world to be able to offer all the solutions necessary to meet the great challenges of our time: the climate change emergency, the increasing scarcity of resources and the challenges of urbanization and digitization.

A market undergoing wholesale structural changes

While the global market is still fragmented, it will quickly become structured due to the commercial opportunities associated with the urgency and

scope of the environmental challenges. This will certainly lead to the emergence of new foreign competitors. Together, our two companies could potentially generate revenues of €41 billion, increasing our worldwide market share from 3% to 5%.

Combining our convergent strengths

Veolia and Suez both have long industrial histories that have forged groups with similar know-how, the same passion for the job and common values, first and foremost among which are respect for the customer and customer service.

The synergies that we will find will not be merely operational, we also want them to be mutually enriching for all our employees.

This is a development and acceleration project. From the outset, we will all have a valuable role to play in responding to the challenges and everyone will have their place in the new group, including at the level of top management. Eventually, it will even create new jobs and new businesses.

“I want to assure Suez employees that not only do they have nothing to lose, but they have everything to gain! There will be no job losses. Within the future group, of course, but this also applies to the activities in France, which we will have to divest for reasons of competition. Each employee will be taken over, with all of their current social benefits.”

Antoine Frérot

<https://www.veolia.com/sites/g/files/dvc2491/files/document/2020/10/Veolia-Suez%20Essentials-Sept-2020-ENG-v2.pdf>

CONSOLIDATING OUR EXPERTISE AND OUR OFFERS



Treatment and distribution of water, collection and recycling of waste (and particularly hazardous and toxic waste), recycling of plastics, decontamination of soil, air quality, optimization of energy consumption, etc.: together, the skills of Veolia and Suez constitute a very broad range of solutions. They also complement each other in lucrative strategic segments: for example, being together would enable us to strengthen our capacities in terms of the recycling of certain plastics such as LDPE (low-density polyethylene), or PET (polyethylene terephthalate) in France. At a time when local authorities and industries are looking to make

their activities cleaner and more efficient, the new group would offer these customers the many capabilities necessary for ecological transformation. The new group will be able to consolidate our solutions and technologies and deploy them on a massive scale, while increasing our investment capacities to respond to the most demanding requirements and also allowing our customers to benefit from increased synergies. In this respect, the digitization of our businesses is a good example: size is a great asset not only in taking on the initial investments, but also in making the most of the data.

With all the things that unite us, this is above all an industrial project that is as natural as it is necessary.

The proposal in four words

EVIDENCE

This is an acceleration project, to find solutions for unresolved environmental challenges faster.

INNOVATION

INCLUSION

This is a development project, and there will never be too many of us for the challenges that we want to take on.

SIZE

This is a growth project, so that we can continue to forge ahead, to be the benchmark company and to meet the challenges of ecological transformation.



INCREASING OUR INNOVATIVE CAPACITIES

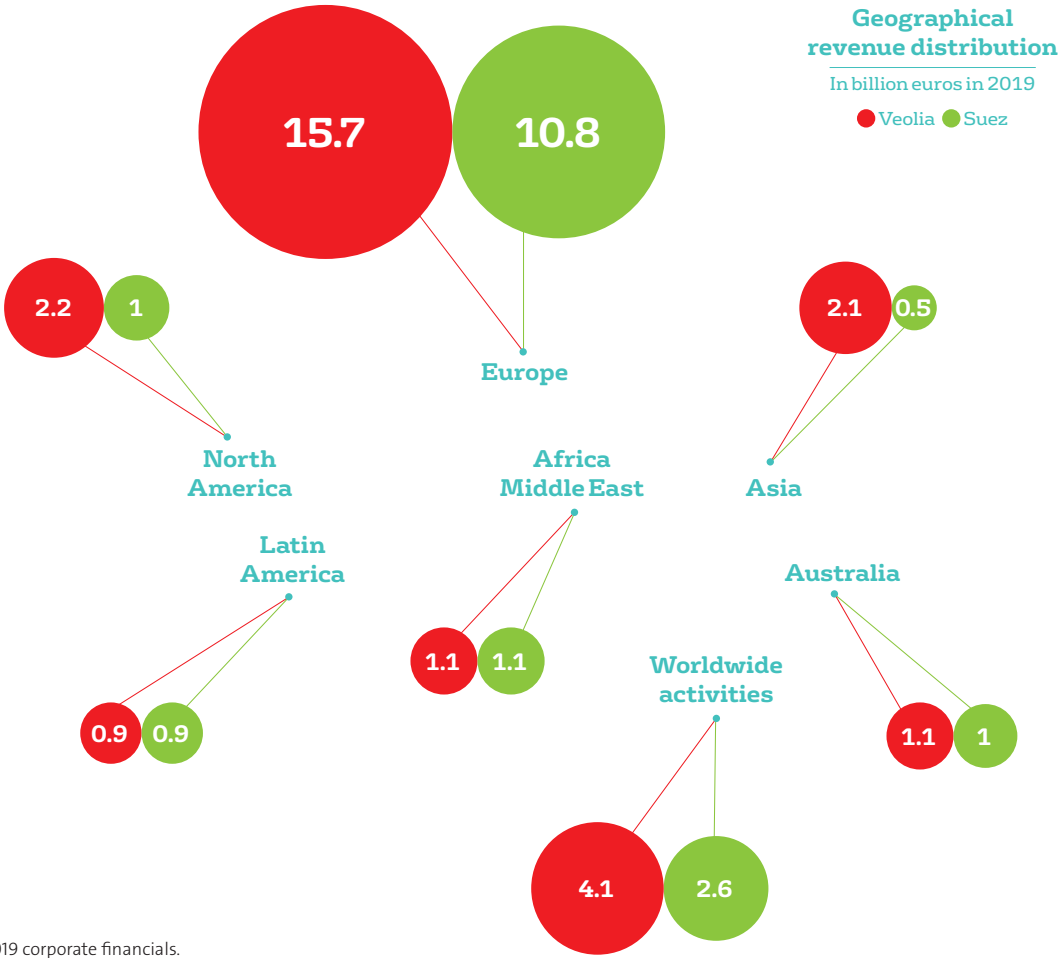
Technologies and solutions that do not yet exist must be invented and perfected if we are to ensure that ecological transformation is a complete success, and if we are to do that, we can never have too much talent, skills or resources for Research & Innovation. Bringing the two companies together will give us a head start in the sectors of the future, as is already the case, at Veolia, in terms of air quality and the reuse of wastewater, among other areas.

These are complex problems where it is important for us to combine both our financial and intellectual capital to multiply the impact of our investments, shorten the “time-to-market” and recoup those investments sooner. Bringing the two companies together will also enable us to extend the virtuous circle that already powers innovation at Veolia, through worldwide sharing of best practices on the ground, so that it can be duplicated or adapted to local conditions.

Due to the complementary nature of the different geographical areas covered by Suez and Veolia, and by consolidating key areas where both groups are established, the international footprint of the new group would be extended, with a stronger position in regions of the world experiencing strong growth.



EXTENDING OUR GEOGRAPHICAL FOOTPRINT



Source: 2019 corporate financials.



In line with our strategic program Impact 2023, and our multifaceted performance commitments, bringing Veolia and Suez together aims to create not only economic and financial value, but also commercial, social, societal and environmental value. Thus, it will benefit all our stakeholders, both internal and external.

CREATING VALUE FOR ALL OUR STAKEHOLDERS

For employees

The new group, which will be larger, more innovative and more international, will offer exciting prospects and opportunities for all the talented people at Veolia and Suez who currently make the reputation of the two entities. We undertake that the transaction will not have any negative impact on employment in France.

For the company

The activities of our two companies, which are central to the concerns of both public and private customers, are highly labor-intensive and provide essential services to the community. The acceleration of our development will therefore have a positive impact on the regions where we are established.

For the planet

Bringing Veolia and Suez together will enable us to develop all the possible solutions to deal with pollution of any kind, including the most difficult, and to confront the increasing scarcity of raw materials.

For customers

Both local authority and industrial customers will find the new entity to be a partner that can help them achieve their specific ecological transformation objectives even more quickly.

For shareholders

This transaction will create value for Veolia's shareholders as early as the first year, in particular through operational and purchasing synergies estimated at €500 million, which have been taken into account in the price offered to Engie.

CONTRIBUTORS



JUSTINE SHUI – EDITOR-IN-CHIEF
Veolia Communications Director for the Asia zone

The war on climate change may have been a dress rehearsal for what we face now. Yet through changed attitudes and fresh political will, we can be optimistic. The ravages of Covid-19 have deeply and forever changed the way we think about our world’s systems, our social structures, transport, environment and health. And perhaps for the first time in history, governments, street activists and boardrooms are singing the same tune: “Green recovery!,” a passionate call to build back a cleaner, fairer and more sustainable economy.

I know many colleagues joined Veolia for the same reasons I did — a connection with nature, a commitment to our “pale blue dot.”¹ So I’m incredibly proud to present this issue of Planet, outlining not only the solutions we associate with Veolia but also the inspiring leadership and confidence demonstrated by teams all over the world. Veolia’s people have rewritten the book on hazardous waste in Australia, kept waste moving through China’s frontline quarantine centers, and developed new solutions on virus identification in wastewater. Our skills keep us looking forward, implementing new digitalization trends, world-leading wastewater solutions in France and new waste solutions in Colombia and Finland. The rehearsal is over: we’ve learned our lines, the spotlight is on us, and we’re giving the performance of a lifetime!

¹The phrase comes from a famous photograph taken in 1990 by the Voyager 1 space probe showing Planet Earth. The astronomer Carl Sagan found the image quite profound, and in 1994 he published a book called Pale Blue Dot: A Vision Of The Human Future In Space, in which he discussed our place in the Universe.

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FRANÇOIS BLAND
Director of Calanques National Park

Appointed at the head of the Park in 2013, the very first director is well versed in the question of national parks. He helped create Guadeloupe national park and steered a ministerial project to regulate the Natura 2000 network, which aims to protect European natural spaces for which the conservation stakes are high. This is a welcome development for the young park, which is the only land, marine and peri-urban park in Europe. François Bland faces a considerable challenge: protecting this exceptional natural heritage on the outskirts of a metropolis of one million inhabitants. His aim is to foster successful collaboration between local authorities and partners and, more broadly, become a gold standard for environmental policies in the Mediterranean.



ÁLVARO SANTOS PEREIRA
Director of the Country Studies
Branch at the Economics Department
of the OECD (oecd.org)

This Portuguese politician, who holds a PhD in Economics and has dual Portuguese and Canadian nationality, cut his teeth as a professor at Simon Fraser University (Canada), before being appointed Minister for Economy and Employment in Portugal from 2011 to 2013, in charge of a major labor reform. Since 2014, he has overseen the review of economic surveys and forecasts for OECD member countries and partners. A key role in the context of the Covid-19 pandemic. With his team, he recommends economic policies able to mitigate the detrimental socio-economic effects of the pandemic, with a view to a green recovery.



CAMILO RODRÍGUEZ
Supply Manager at Coca-Cola
FEMSA Colombia

Camilo Rodriguez joined the biggest bottler of Coca-Cola products in the world (in volume terms) in 2010. Initially responsible for supplies for the South America and Brazil area, he now manages all the company's purchases for Colombia, covering some twenty cities that are home to manufacturing sites and distribution centers. It is also a way of building closer relationships with local communities near the sites and helping develop social initiatives for their benefit.



The long road to
the Canadian Green
New Deal

More than a decade after its first federal green economic stimulus package (Global Green New Deal, GND) in 2008, Canada put forward a new Pact for a Green New Deal (PGND) in May 2019. Coming from a broad grassroots coalition of scientists, trade unionists, citizen groups, indigenous peoples, etc., it demands that the federal authorities make a greater effort to meet the greenhouse gas (GHG) emission reduction goals set by the Paris Agreement¹. In other words, reducing national carbon emissions by 30% (compared to 2005 levels) by 2030 in order to reach carbon neutrality in 2050². These efforts target 100% renewable energy, eliminating all oil production from bitumen sands, and halving national GHG emissions by 2030³. The reward will be the creation of over a million jobs. The stimulus package also aims to reduce isolated populations’ high

dependency on fossil fuels. These populations still largely rely on off-grid energy systems primarily powered by diesel-fired generators. At present, the goal of reducing GHG emissions is difficult to achieve, as they have increased by eight million metric tons in the country between 2016 and 2017, according to the Quebec daily newspaper Le Devoir⁴. The federal government is also relying on CO₂eq⁵ capture and storage technologies to solve this complex equation in the short term, thus meeting its international climate commitments.

¹ Canada is a signatory of the Paris Agreement. See also trend note “An inclusive green deal for Europe” for a recap of the goals of this agreement.
² Progress towards Canada’s greenhouse gas emissions reduction target, Ministry of Environment and Climate Change Canada, 2020.
³ Canada’s Green New Deal: Forging the socio-political foundations of climate resilient infrastructure?, Science Direct, July 2020.
⁴ La cible de réduction des GES du Canada respecte-t-elle l’accord de Paris ? Le Devoir, Oct. 2019.
⁵ Carbon dioxide equivalent (CO₂ equivalent or CO₂-eq) is a metric measure used to compare the emissions from various greenhouse gases on the basis of their global-warming potential (GWP).
Source: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Carbon_dioxide_equivalent/fr



In South Korea:
a Green New Deal
that banks on
hydrogen and digital

The South Korean government is planning a 30-billion-euro (42,700-billion-won) budget increase for the first five-year green plan (113.6 billion euros — 160,000 billion won) launched in 2017 by President Moon

Jae-in. Announced in July 2020, this political decision is set to both revitalize the national economy, which has been hit by Covid-19, and accomplish the goals of the Paris Agreement. Like the European Union, the Republic of Korea is looking to achieve carbon neutrality by 2050. These additional funds aim to increase the share of renewables in the energy mix from 20% in 2030 to 30-35% by 2040: 6.532 billion euros (9,200 billion won) will be devoted to this. In the longer term, the public authorities wish to rely on a hydrogen

TRENDS

An inclusive green
deal for Europe

In her first speech on the State of the Union¹, the President of the European Commission, Ursula Von der Leyen, detailed its climate ambition to MEPs: reducing greenhouse gas (GHG) emissions by at least 55% by 2030 compared to 1990 levels, in order to reach carbon neutrality² by 2050³. Some 37% of the 750 billion euros marked for the post-Covid European stimulus plan will be devoted to the European Green Deal. “And 30% of this 750 billion euros will be raised via green bonds,” added the President. European climate legislation, expected by summer 2021, is set to turn this political commitment into a legal obligation. The road map breaks down the main areas for action: protecting ecosystems, guaranteeing a more sustainable food chain, ensuring a low-carbon approach in the energy, transport, farming and construction sectors. As well as thermally renovating buildings and developing new zero-carbon energy sources. And finally, eliminating pollution more quickly and effectively. This vast program was subject to a three-month public consultation (April to June 2020). This served to involve stakeholders from citizens to manufacturers in drawing up inclusive legislation, thereby increasing the chances of success of this action plan, which aims to make Europe the first climate-neutral continent by 2050.

¹ Plenary session of the European Parliament in Brussels, September 16, 2020.
² Balance between greenhouse gas emissions and their absorption.
³ Goal required by the Paris Agreement, 2015 (COP 21).
Sources: What is the Paris agreement, UNFCCC and https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_fr

economy. This means building enough production plants for this fuel to be able to produce 500,000 vehicles by 2030, intended both for export and to meet the domestic demand for zero-carbon mobility. Mr. Moon Jae-in is also banking on a digital economy by 2025. Ultimately, the government is aiming to create 567,000 jobs in these high value-added sectors of activity.

Sources: <https://thediplomat.com/2020/05/south-korea-green-new-deal/0>; <https://www.bloomberg.com/news/articles/2020-07-14/green-new-deal-in-south-korea-stops-short-of-zero-carbon-target>

CZECH REPUBLIC ACQUISITION OF THE HEATING NETWORK SPECIALIST

The acquisition of Pražská teplárenská (PT), which runs the country's largest heating network — 550 kilometers, with over 400 employees and 230,000 households served, is a new step in the development of heating networks in the Czech Republic. And strengthens Veolia, which operates the district heating network on Prague's left bank, while PT is responsible for the network on Prague's right bank. This acquisition also makes it possible to consolidate the Group's historic ties with the municipality of Prague, which is a shareholder in PVK, Veolia's subsidiary that has been in charge of the capital's water and wastewater for over twenty years.

EUROPE VEOLIA-SOLVAY ALLIANCE TO RECYCLE LITHIUM-ION BATTERIES

Faced with the strategic challenge of raw material availability and convinced that the materials used for lithium-ion batteries are not always recovered at peak value, the consortium that brings together Veolia and the Belgian chemicals group is aiming to recover and recycle the rare metals used in electric and hybrid vehicle batteries. And is promising more effective resource management based on the reuse of critical and rare raw materials. This circular ecosystem is timely, as the number of electric vehicles in circulation is set to rise from 8 million in 2020 to 116 million in 2030.

Armed with its slogan “Upcycling the future,” the third place Baobab, co-created by TheMakerSpace Foundation and Veolia with its Foundation's support, is opening its doors in Durban in December. The aim is to develop solutions that create green jobs.

Veolia in Australia-New Zealand and the Timor offshore services group Caltech have signed a memorandum of understanding to draw up a complementary business offer in the sectors of water, waste, industrial services and sustainable energy solutions in Timor-Leste.



FRANCE RECYCLED PLASTIC IN 3D PRINTING

While techniques for manufacturing 3D plastic filaments are generally limited to recycled resins (PET, PS and black ABS), Veolia and the French 3D printer filament manufacturer Francofil are innovating with recycled polypropylene (PP) and colored ABS filaments. Used by many sectors — automobile, electronics, aeronautics, biomedicine, architecture — to produce their prototypes, 3D printing turns to plastic filaments as these consumables are less expensive, flexible, resistant and available in a wide variety of colors. Within the framework of this partnership, Veolia supplies the recycled resins to Francofil, which produces these new filaments that guarantee high-quality printing.

VEOLIA BECOMES OL'S LEADING ENVIRONMENTAL PARTNER

An Olympique Lyonnais partner for the past decade, Veolia has committed to two more seasons (2021-2022) and is helping the soccer club draw up a strategic low-carbon plan, from the review to implementing actions to reduce greenhouse gas emissions. Through this partnership, Veolia is looking to become involved in the CSR policy conducted by OL both as a soccer club and a sports facilities manager. In parallel, the Group is becoming a major partner for OL's women's team. This refocus on CSR and women's soccer is more in line with the goals that Veolia has set itself through its sponsoring activities and will allow OL to raise its game when it comes to environmental and societal issues.

ROMANIA BUCHAREST'S WATER MANAGEMENT EXTENDED BY 12 YEARS

Bucharest city hall has signed a 12-year extension (until 2037) with Apa Nova (a Veolia subsidiary) for the concession contract concerning the capital's water and wastewater management. Apa Nova is responsible for investing some €367.9 M in a multi-year program of strategic work over this period, providing Bucharest's more than 2.2 million inhabitants with services that meet a high level of excellence and safety.



SAUDI ARABIA IN JUBAIL, A WTE PLANT FOR SADARA CHEMICAL

The fruit of an accord between Veolia and Sadara Chemical Company, a joint venture between Saudi Aramco and The Dow Chemical Company, the plant for treating and recovering the energy from hazardous waste will safely treat the waste flows from PlasChem Park, an industrial area next to the Sadara Chemical complex, from 2021. The energy from this waste will be used for industrial utilities (steam, heat, water, cooling) for all the site's resident businesses. The project also supports the kingdom's goals defined in its Saudi Vision 2030 development plan: 30% energy production from renewables and other sources, with waste recovery technology creating around 12,000 jobs, which represents up to 6% of the region's employment.

The Veolia foundation's 2020 Environment Book Prize was awarded to the economist and urbanist Jean Haëntjens for his work “Comment l'écologie réinvente la politique - Pour une économie des satisfactions.”

After Silicon Valley and Paris, Singapore is the third step for the End Plastic Waste innovation acceleration platform, a partnership between the Alliance to End Plastic Waste, of which Veolia is a founding member, and Plug and Play.

INSIDE

GLOBAL WATER MARKET COVID-19 AND VEOLIA

Published on October 1, the “Water Treatment Market: Size, Trends and Forecasts (2020-2027)” report puts forward a post-Covid-19 scenario regarding the prospects for growth for water operators and highlights Veolia as one of the major players in this crisis recovery phase.



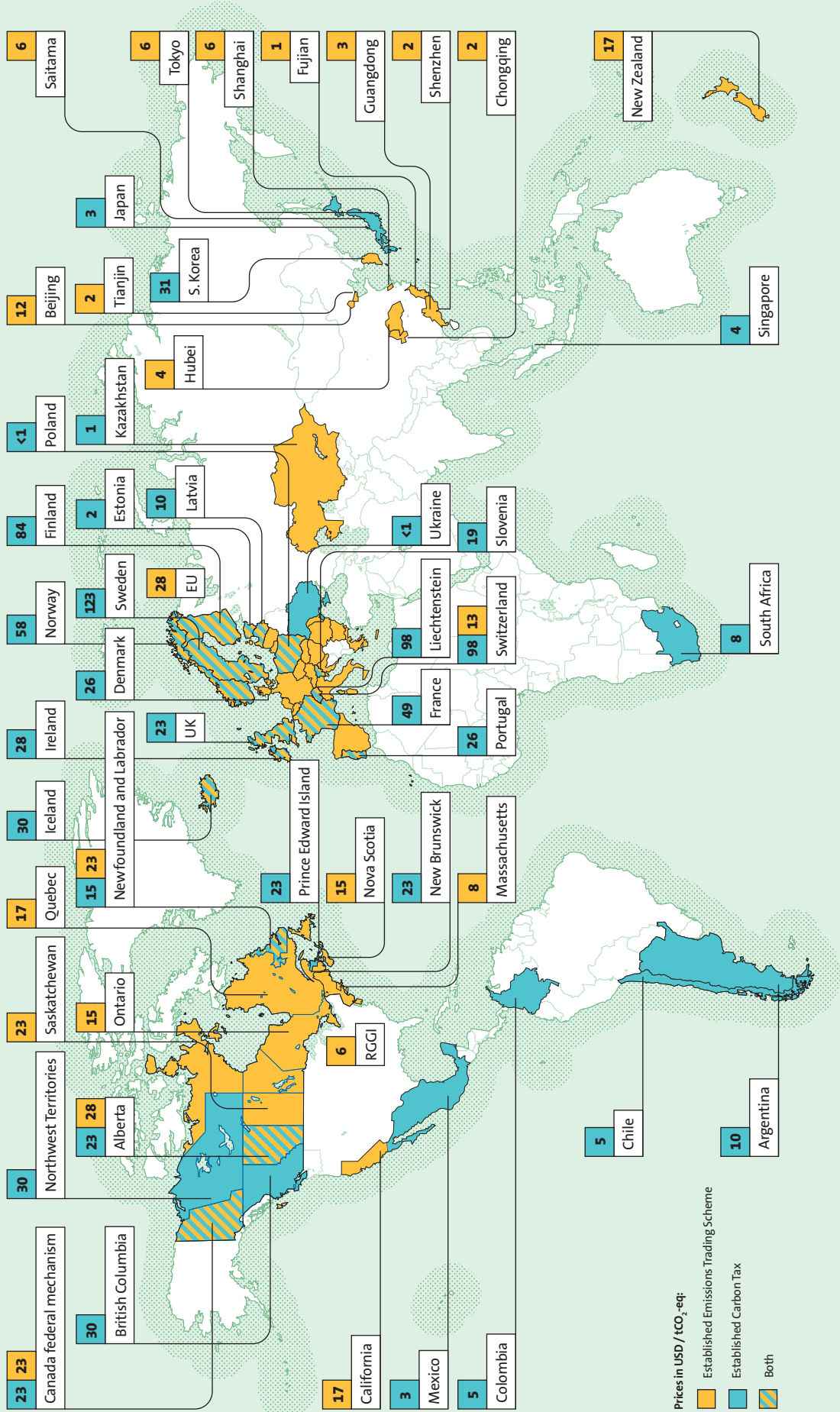
BELGIUM INDOOR AIR QUALITY: AN ISSUE FOR RESUMING CULTURAL ACTIVITIES

To encourage the public at large to return to movie theaters, museums and shows, UGC Belgium has put in place — with Veolia's assistance — a solution to control, monitor and optimize the indoor air quality of the three movie theaters that it manages (including the two largest in Brussels and Antwerp, with a total of 42 screens welcoming over 2,500,000 spectators per year). The aim of this partnership is to provide reassurance by indicating that, beyond the standard measures and adapted schedules, the ad hoc management of HVAC (heating, ventilation and air conditioning) systems follows the same protocols as those adopted in hospitals or European institutions under contract with Veolia.

Does CO₂ emission taxation reduce global warming?

Signed by almost 200 countries in 2016, the Paris Agreement aims to limit global warming to well below 2°C through a concerted effort to reduce emissions, reaching carbon emission neutrality by 2050. Global taxation of carbon dioxide emissions increased by 182% between 2016 and 2019, jumping from \$16.9 bn to \$47.8 bn. Carbon dioxide emissions, however, have still risen at an annual average of 1% over the past decade.

MAP OF EXPLICIT CARBON PRICES AROUND THE WORLD IN 2020

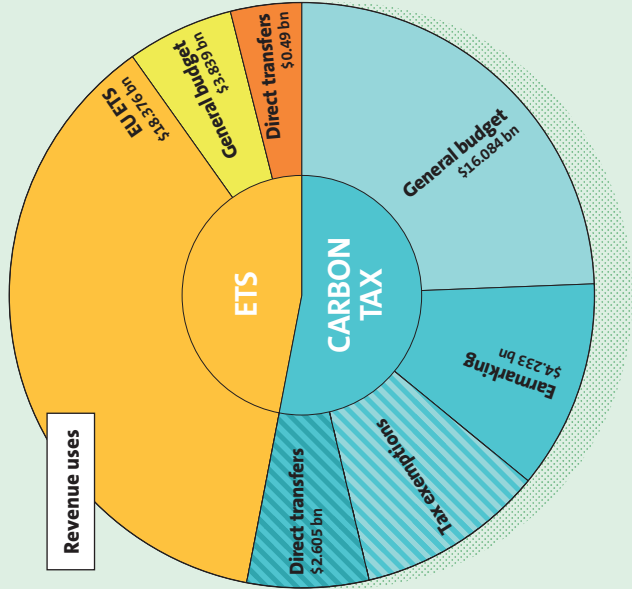
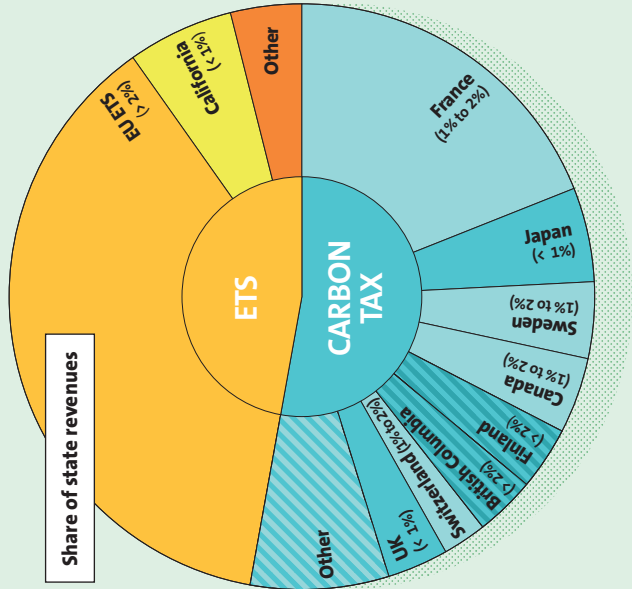


▲ The 2017 report of the High-Level Commission on Carbon Prices co-chaired by Joseph Stiglitz and Nicholas Stern established that, in order to achieve the Paris Agreement climate goals, all countries need to fix a price of \$40 to \$80 by 2020 per metric ton of carbon dioxide emitted and \$50 to \$100 by 2030. The map above shows that only a small number of countries have reached the 2020 target.

CARBON TAXATION COVERS 60% OF GLOBAL GDP

In 2020, 44 countries and 31 territories representing 60% of global GDP and 43% of total CO₂ output are taxing carbon emissions, either through direct taxation (carbon tax), a quota trading system (ETS), or the combination of both. The pricing per metric ton of CO₂ ranges from under \$1 to \$123.

CARBON REVENUE PROPORTIONS AND RESOURCE ALLOCATION



CARBON EMISSION REDUCTION BEYOND ECONOMIC SLOWDOWN

The only time when carbon dioxide emissions decreased in the past twenty years is during economic slowdowns, such as the 2008 financial crisis or this year's COVID-19-related restrictions: global CO₂ emissions decreased by 8.8% (~1,551 Mt CO₂-eq) in the first half of 2020 compared to the same period in 2019. Pricing carbon emissions has yet to prove its efficiency, notably by financing significant decarbonization programs, such as replacing fossil fuels used in transport with renewable energies.

Source: <https://www.nature.com/articles/s41467-020-18922-7>

HIGHER CARBON PRICES, BETTER ALLOCATION OF RESOURCES

Carbon taxation also encourages alternative energy by making it cost-competitive with cheaper fuels. As shown, a significant number of countries do not participate, or only very modestly, in global carbon emission pricing efforts. Taxes need to increase to higher levels, in more countries, and to cover wider tax bases. Some sectors or industries are not covered by their country's carbon emission taxation schemes, offsetting their transition to cleaner energies. Switzerland, for

example, has one of the highest carbon taxes in the world (\$98 per tCO₂) but it covers only one third of the country's emissions. CO₂ emission revenue use can be optimized. Earmarking fiscal resources toward specific projects (such as renewable energy production, decarbonized construction and transport) is more efficient than incorporating collected funds directly into national budgets. More targeted use of a larger-based carbon fiscal resource may lead to a sustainable reduction in CO₂ emissions, encouraging cleaner energy use by making it cost-competitive with cheaper fuels.

The health crisis' impact on business: how can we build a more sustainable recovery?

We meet Alvaro Pereira and Régis Calmels.

14/15



Alvaro Pereira
Director of the Country
Studies Branch at
the Economics Department
of the OECD



Régis Calmels
Veolia's Senior Executive
Vice-President of Asia

The Covid-19 pandemic and the global economic crisis that it has triggered are a unique occasion to make our economic and social models more resilient. There are opportunities to be grasped, such as the acceleration of digitalization and the local – and sustainable – optimization of companies' performance. A dialogue.

Nine months after the beginning of the pandemic, which sectors in your view are the winners, the losers, and those that are in between?

Alvaro Pereira: In many ways, we are all losers, because we are facing the biggest economic shock of our lifetime, with substantial impacts on incomes and businesses. It's both a supply and demand shock, of unprecedented proportion since the Great Depression. Some sectors are benefiting from the situation: pharmaceuticals and healthcare but also digital services, like streaming and cybersecurity. Major online distributors, like Amazon and others, have seen a substantial increase in online trading and are expected to post record profits. But others are and will be deeply affected: travel, accommodation, restaurants, and the arts. Independent workers are severely hit, just like many others who are not in a position to benefit from governmental support. For its part, the utilities sector has been less affected than many. The impact of the crisis was mostly on the demand side, as less income translates to less demand. Workers in the electricity, waste management and water services maintained infrastructure and allowed us to stay serenely at home during the first wave of the virus. And the public became aware of how critical their work is. As the second wave hits, these services are still as essential as ever.

Régis Calmels: I completely agree: some sectors have clearly expanded through the crisis; companies operating in information and communications technology (ICT) for instance, providing teleconferences and webinar services that have been widely used during the lockdowns, both by businesses and a wider public. In the utilities sector, Veolia has reinforced its position: all our stakeholders have fully understood the importance of providing continuity of essential services for populations and customers in lockdown. That was and remains the crucial mission of our sector.

What are the primary lessons in terms of the resilience of essential services and their business models?

R.C.: We observed three lessons. Firstly, the robust resilience of our business models. The second point is how Veolia delivered its services by deploying a collective effort based on a decentralized operational organization; a strong local presence supported by highly professional centralized coordination. By coordination, I mean an efficient HQ crisis committee, clear health and safety measures, and extremely efficient communications. Our third lesson points at the need to accelerate our digital systems and solutions development. Their deployment enables virtual visits to our local sites, for example.

A.P.: The utilities sector showed significant resilience during the crisis. In spite of a major shock and lockdown, there was no disruption of service or any major complaints, as the public realized the importance of these essential services. Regarding the economies themselves, resilience additionally came from governments throughout the world very proactively buffering the shock. Our capacity for recovery was also due to the good economic policymaking during the crisis. In the long run, we should prepare ourselves for other shocks. Not necessarily a pandemic, but it is always better to be safe than sorry.

Deep down, are the weaknesses identified leading to a rethink of major (environmental, climate, social and economic) issues and an acceleration of the transition toward equitable, resilient and sustainable societies?

A.P.: The pandemic will lead us to rethink many of our work practices, our organizations, and even the way in which we deal with each other. It will have a long-lasting impact as a factor for change. And the longer we stay under lockdown or the pandemic lasts, the more ingrained the change to our work habits will be. The silver lining of the pandemic in economic terms, even in societal terms, has been the fantastic

FORUM

acceleration of digital practices: we'll travel less, work and hold more meetings remotely. Already a critical infrastructure, digital is now vital, as our communications — even face-to-face — rely on it. As telework is here to stay, we might not need as much office space as we used to: offices will be used for group or business meetings. Some firms already use online solutions extensively. Many companies have understood that if they don't invest substantially in digital, going forward to interact both with their customers and their suppliers, they will lag behind and lose.

R.C.: Digitalization has indeed appeared as a key resilience factor for most organizations. Furthermore, the pandemic has revealed to many stakeholders the need for a transition to more resilient, equitable and sustainable societies. Through its purpose, Veolia had decided to do so, well before the crisis erupted. Resilience, fairness, inclusivity, and sustainability are at the heart of the Group's culture and its strategic "Impact 2023" program. In Asia, our business is well balanced between our activities for local authorities and our activities for industrial clients. As the risks of these two activities are complementary, the crisis will not fundamentally change our regional "Impact 2023" implementation. On the contrary, we are accelerating the roll-out of our internal tool processes and digital solutions. We are stepping up the deployment of the 18 priority objectives in Veolia's Purpose — including reducing GHG emissions, increasing plastics recycling, and improving people's access to water and sanitation — along with our multi-faceted performance across all our teams and projects, to achieve our ecological transformation ambition.

How do businesses anticipate the changes and find new opportunities?

R.C.: This crisis will generate new standards and practices. Businesses are showing strong innovation capacities. Efficiently structured and digitally operational companies that are fully committed to working with agility and creativity are geared to benefit from new opportunities during and after the crisis. As the world leader in ecological transformation, Veolia is one of them. At the heart of the crisis over the past months, we have been able to make progress and in Asia, for example, negotiate the renewal of important contracts: in Korea with LG Lotte and Kumho, and in Hong Kong with the local authorities concerning the region's Hazardous Waste Treatment Plant.

“The silver lining of the pandemic in economic terms, even in societal terms, has been the fantastic acceleration of digital practices.”

Alvaro Pereira

Our local teams are well organized and empowered to make decisions in close connection with local authorities — which is crucial for our stakeholders. When a crisis arises, our people know how to react and act locally, while global coordination continues to be ensured at our crisis committee headquarters. For all these reasons, I'm confident that the crisis is presenting us with strong opportunities to accelerate our development over the short and the long term.

A.P.: There will be tremendous new business opportunities. Everybody started buying online goods during lockdown. We changed the way we purchase our products and interact with companies and even with governments. Changes in business standards and work practices will last, even if it takes a while to complete them. We are at the beginning of an era of major transformation.

Which measures made it possible to avoid economic collapse and what further actions would provide a sustainable solution to the effects of the crisis?

A.P.: Governments' first reaction was to introduce exceptional measures. Short-time work or job retention schemes would have been unthinkable in major countries, like the UK, a few months ago. They were a reaction to "stop the bleeding" before the situation got out of control. Without those measures, we would be embroiled in major economic and social crises by now, with millions of unemployed and hundreds of thousands of businesses failing. Substantial packages were brought forward. Central banks stepped out of the box, reducing rates when they could, injecting money into the economy or providing liquidity. Policies unheard of in usual economic circumstances were enacted on a large scale, all across the world. ▶



“At the heart of the crisis, we have been able to make progress and in Asia, for example, negotiate the renewal of important contracts.”
Régis Calmels



The next step involved countries designing economic recovery plans. This is our current stage, despite a second wave of the pandemic.

Once the pandemic is over, with an effective treatment or a vaccine, the priority will shift to recovery plans, to the public investment and reforms required for improving our countries and our societies. Very few countries are in this process today. In a year or so's time, many more will be discussing reforms. After emergency measures and recovery plans, reforms and economic policy will aim at providing sustainable solutions to avoid massive economic crises ahead.

R.C.: Indeed, many exceptional measures have already been implemented by governments in many countries to support the sectors hit by the crisis. The European Union has shown a dynamic approach to some industries of the future. Similar initiatives have been taken in China, the US and other countries. Agile and innovative companies, willing to improve their operational efficiency while respecting environmental, climate, social, and economic commitments, will provide a key contribution to durably resolve the effects of the crisis.

What is the economic outlook identified for a company facilitating access to essential services like Veolia?

A.P.: A company having provided essential, critical services at the height of the biggest health and economic crisis we have known will be regarded differently in the future. Policymakers are certainly conscious of this shift and are also thinking: "In the third stage of economic policymaking, how can we achieve a more environmentally friendly and sustainable recovery?" The focus on sustainability — on providing water and energy and managing waste in a sustainable way — will be a large part of their agenda. A company like Veolia can either seize the opportunity... or be surpassed by more innovative competitors.

R.C.: As well as confirming the resilience of our current model, the crisis leads us to further optimize water and energy resource management and encourage waste recovery activities. Saving global resources is a key challenge and at the core of Veolia's businesses and Purpose. And I can assure you, we will not be found wanting.

What would be the right way to think about 2021 and beyond for an essential services provider like Veolia?

A.P.: If we discover an effective treatment or a vaccine

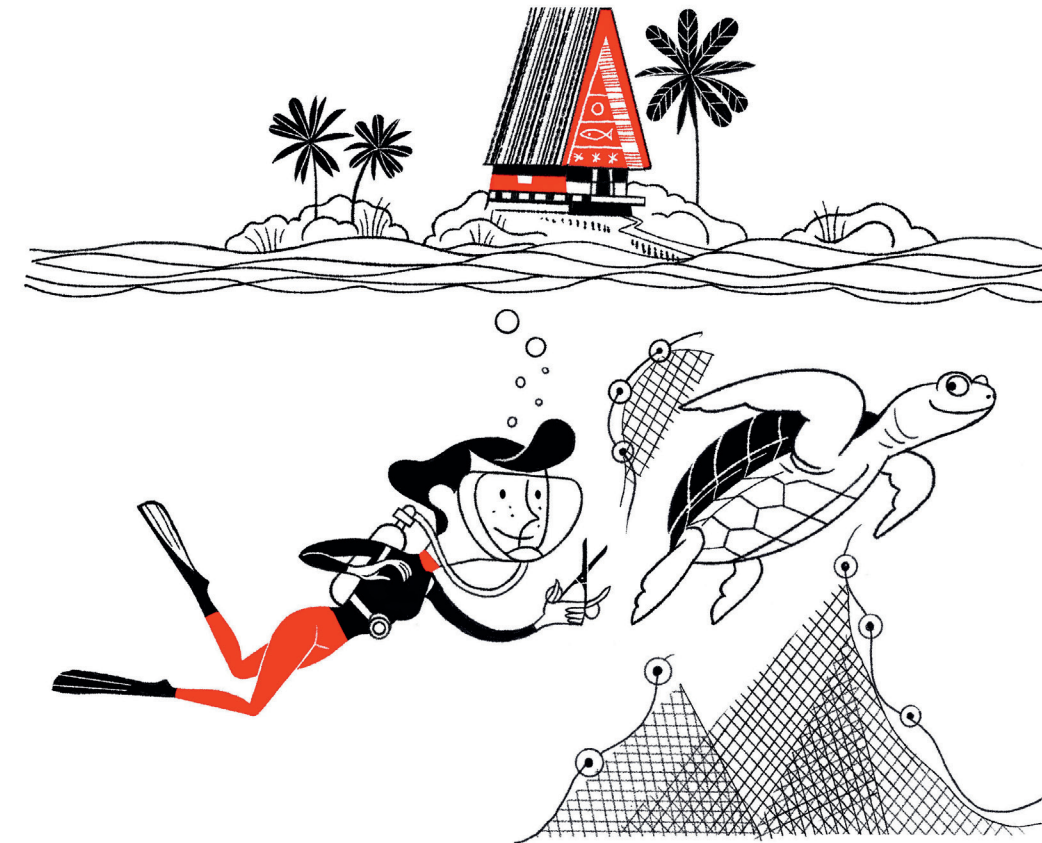
"The crisis leads us to further optimize water and energy resource management and encourage waste recovery activities."

Régis Calmels

against Covid-19, we are going to see a substantial improvement in expectations. People and businesses will feel a lot more confident; consumption and investment will resume. Let's hope this happens in 2021; it might not. As a company, you need to be prepared for both scenarios: additional waves of the pandemic or a medical breakthrough making it possible to resume business as usual. In the latter scenario, it will be a good time for essential service companies and other strategic providers to start thinking: "Okay, how can we learn the lessons from the pandemic in terms of work practices, teleworking, in terms of dealing with our customers and suppliers? How can we take the lessons that we learned over the past months to change our business so that it becomes more profitable, hopefully, but also more sustainable?" This is the key challenge, and should be the main strategic focus going forward into 2021.

R.C.: If the pandemic is brought under control in 2021, we certainly expect business to pick up rapidly. Raising mobility issues and the difficulties of organizing meetings with partners and potential clients, the crisis delayed some of our new projects in 2020. Some developments were postponed, but new opportunities also emerged out of the crisis. We are continuing to make progress on many items, including our "Impact 2023" objectives. Regardless of when the recovery is complete, we are geared to anticipate our markets' evolution. I agree that sustainability is now more than ever a central question for public authorities and businesses, and even more so where essential services are concerned. In this context, the key words that come to mind for 2021 and beyond are, as ever: agility, creativity and efficiency. ■

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Above and beyond

Meeting Veolia employees from all over the world

Take a collective approach: a motto shared by Claudia, responsible for sulfuric acid regeneration in Texas, and Ahmed and Jean-Philippe, involved in waste management for the city of Paris.

Claudia Lopez

*Manager of
a spent sulfuric acid
regeneration facility*

While she introduces herself as “a mother, a woman, a wife, and a plant manager,” Claudia has no bones about revealing that she is completely and single-mindedly dedicated to each of her roles. And her 27 colleagues — 26 of whom are men! — would certainly not disagree...

Claudia has a long history with El Paso. This lively thirtysomething left the city at the age of 18 to follow chemical engineering studies in Indiana. After 11 years in the food processing industry, she returned there to complete her education with an Executive MBA and start a family.

Appointed manager of Borderland’s spent sulfuric acid regeneration facility in 2018, she puts into practice her convictions and expertise in terms of the circular economy. The plant backs onto its main client, Marathon Petroleum, which uses sulfuric acid as a catalyst in the crude oil refining process. Veolia recovers the acid gas from the refinery and extracts the sulfuric acid from it, regenerating it to sell it back to the refinery. This allows the client to reduce both its environmental footprint and its costs. “Out of the 450 metric tons of acid treated each month, 230 return to Marathon. The surplus goes into our local industrial ecosystem,” explains Claudia.

At the helm of a plant operating 24/7, 365 days a year — “if we want to close, we have to give the refinery six months’ advance notice!”,

Claudia aims for excellence when it comes to its production. Her golden rule: scrupulously following the safety measures inherent in the treatment of a waste material considered to be highly toxic, not forgetting the ongoing drive to reduce sulfur dioxide emissions, which are currently below the industrial thresholds. A real challenge for this windowless ‘pocket-sized’ plant, where the slightest maintenance operation turns into an organizational headache.

It therefore comes as no surprise that the reliability of the facilities — which must contractually reach 98% — is Claudia’s number one priority for 2021. If the refinery’s production lines shut down for a long time, this could affect the leak tightness of the plant and risk having acid leaks. “Our operations are closely linked to those of the refinery, and if we had an extended unexpected shutdown, it would cost millions of dollars in contractual penalties!” she reveals.

Hence the importance of the close working relationship fostered with the manager of the refinery: “It’s like a team within a team. We share our strategies, road maps and innovation ambitions for the oil sector.” This close-knit management style made discussions and decision-making much easier when the Covid-19 crisis hit. “The slightest problem is potentially serious here and it is important to collectively contend with the hazardous environment in which we work,” concludes Claudia.



#WEARERESOURCERS

Jean-Philippe Moulin

Waste collector

Ahmed Samassa

Driver

Veolia – Waste Solutions business line, Public sector client service agency

Like all their colleagues who continued to work despite the risks and anxieties caused by the coronavirus epidemic, Ahmed and Jean-Philippe emerged as “everyday heroes” overnight. The health crisis shone a spotlight on their profession, which often goes unrecognized and yet is essential... The first links in the waste chain, they are responsible for the mechanized collection of household waste and recyclable materials in Paris. Whatever the weather... even during lockdown. What has changed since March 2020? Reinforced health and safety protocols, first and foremost, but also a rediscovery of the importance of these frontline workers who provide these key services, and the attitude of the people with whom they rub shoulders daily.

From his garbage truck cab a few meters above the ground, Ahmed observes the bustling streets of the 11th that come alive at night. He began his shift on board the truck at 4.15 p.m. and his round will finish around 10 p.m. In the meantime, he will have received his itinerary, put on his safety gear and inspected his truck in detail, before following the route of his round via GPS.

For his part, at the rear of his garbage truck with his crewmate, Jean-Philippe travels through the streets of the 19th from six in the morning, 5 days out of 7. In this area with a high concentration of social housing projects, he keeps up a sustained, measured pace until

2 p.m.: alight, inspect the recycling bins, collect, empty, and climb back on board.

Whether driver or waste collector, they are both aware of giving a rhythm to the city as they clear it. Their route is punctuated with encounters and moments that enrich their job, such as a free coffee from a bistro owner or doing little favors for residents. They participate in local life, playing a reassuring role, especially during rounds at night. Vigilance is the watchword once they are on the streets: it is vital to protect the crew, who have to show speed and agility.

Jean-Philippe and Ahmed will soon be celebrating 20 years of working in waste management, without any feelings of bitterness or demotivation: they're not the type! For the former boxer and philosophy enthusiast and the brown-belt in karate with a Zen attitude, the recent recognition of the profession is only fitting: “During the rounds, you block vehicles, drivers honk their horns, people in a real hurry insult us... But since the crisis, many people clap us from the window or sidewalk and encourage us by acknowledging our work!” They admit that the drawings and little words of encouragement left or stuck on the bins during lockdown gave them a boost and helped them stay committed during this difficult time. They are proud of their job as a waste collector and driver. And they both know that their work enhances not only the image of Veolia but also that of Paris — the City of Light.


La Plaine Saint-Denis –
France





FRONTLINE

Moving mountains in China's medical waste business

On January 23, 2020, the world had not yet plunged into the disaster scenario of Covid-19. Yet the virus was already wreaking havoc in China. It was Lunar New Year's Eve, which sees a huge migration of people each year. To stop the diffusion of the virus, several areas had been put into quarantine. In Zhejiang Province, the local authorities appointed Lijia hazardous waste treatment facility in Hangzhou, run by Veolia, to manage the mountain of infectious medical waste from several coronavirus hotspots.

January 2020: the last "business as usual" days for the planet yet Covid-19 was barely making international news. Outside mainland China, only SARS-hardened Hong Kongers were wearing daily masks. Just a handful of cases had spread into the wider world.

Within mainland China, of course, it was a different story. Authorities were already fighting tooth and nail to contain this new and contagious virus. Wuhan was in a total lockdown. And some 350 miles east of Wuhan, nestled in the scenic lake environment of Hangzhou, one of the eastern

seaboard's largest hazardous waste facilities was gearing up for the mightiest challenge of its career.

Pandemic strikes at waste peak
"Lunar New Year, China's largest human migration, is already peak time in the



ISSUE AT STAKE

A fast-moving hazardous waste situation without protocol or precedent, due to the health crisis, exacerbated for many firms by the staff shortages over the Chinese New Year holidays.

OBJECTIVE

Protect public health and demonstrate leadership and confidence while tackling the monumental task of timely disposal of fast-mounting hazardous waste.

VEOLIA SOLUTION

A 24-7 service pledge and level-headed professionalism set effective boundaries between clinical and non-clinical waste and handle near-doubling of volumes.



KEY FIGURES

- New medical waste streams predicted in China in 2020: **179,000 metric tons**
- Staff typically on leave during Chinese New Year: **40%**
- Waste disposed from Hangzhou Medical Observation Point and quarantine zones and treated by Lijia, Jan-Sep 2020: **1,937 metric tons**
- Plant capacity during peak Covid-19 operation: **145%**



waste resource business,” explains Dai Bing, General Manager of the Hangzhou Lijia Hazardous Waste Treatment Facility, managed by Veolia. Millions of businesses, from mom-and-pop shops to global tech firms, go into overdrive with spring cleaning routines. “And many waste facilities shut down for weeks, leading to a peak before the holidays,” says Dai. As an international joint venture serving industrial clients who do not have the luxury of shutting down for lunar holidays, Lijia made a practice of maintaining full capacity over the New Year period. As such, when Covid-19 struck the heart

of China, Lijia was one of few plants in the region running at a full speed.

Circular economy professionalism restores confidence
While recycling was the furthest from anyone’s mind at this time of crisis, the adoption of Veolia’s circular economy principles of waste as a resource gave Lijia a sound footing for managing the crisis. The firm quickly emerged as a leader in the province, formulating actionable advice for the government including the movement, transfer, handover, tracking and reporting of these new waste streams, assuaging

government fears over contaminated waste comingling with domestic waste streams, and attaching a calm, professional confidence to the whole operation, which extended into government policy. The Zhejiang Multi-Level Emergency Command Department drew on the policies and recommendations of plant management as government and corporates navigated the situation. On the ground, Veolia’s emphasis on a safety culture kept operations not only professional but also calm — without panic or fear. Personal protective equipment (PPE) was in short supply the world over, but a careful and rational approach — and support from

Veolia teams globally — assuaged fears of running out. The plant at first controlled the use of PPE, delimited hazardous zones and implemented new protocols for different areas. Using PPE appropriately reduced operational risks while preserving critical stocks. The firm even provided PPE assistance to some government agencies.

Ramping up
Within a few days of its appointment by the government, Lijia was handling double its usual waste. What’s more, the government required all medical waste to be handled within 24 hours instead of 48, which meant a shift in its incineration mix and doubling the pre-treatment workload. “With the facility working outside all expected parameters, senior management stepped onto the frontlines to support and ensure safe working hours,” says Dai, “and to boost morale and confidence.” Veolia’s solution demonstrated to the client and government the flexibility and skill to adapt waste volumes treatment in these times of crisis. Management, training and technical expertise all played a part in deploying the capacity upgrade. From Chinese New Year to early September, the facility trucked in and disposed of almost 2,000 metric tons of waste from Hangzhou Medical Observation Point and the province’s quarantine zones — on top

of its usual peak season hazardous waste processing work. Dai Bing says the efforts are a testament to the staff and operational professionalism of the plant. But is such a peak sustainable? According to him, the plant changed gears smoothly and under full control — this was no pell-mell dash leaving the plant and its

workers exhausted and spent. “We now know such operation is sustainable,” he says. As a franchise operation, the levels of waste handled by the plant are fairly predictable, set by government and clients: but at least, he says, “we know we have the ability to break through when required.” ■

AGILITY MEANS NEW BIOCLEANING OPPORTUNITIES

The Hollywoodesque sight of operatives clad in white biohazard suits spraying down supermarkets or bus stations would have sparked mass public panic in pre-Covid-19 times, but today such cleaning crews are commonplace in shops and offices across the world. As businesses work to narrow down the locus of Covid-19 risk, disinfection of potentially contaminated surfaces and spaces is a frontline defense: effective,

visible and even comforting to residents and workers. Veolia’s French subsidiary STPI adapted quickly to provide basic training and services in biocleaning floors and work surfaces, as recommended by the High Council of Public Health and the Ministry of Solidarity and Health. Moreover, the Group leveraged the expertise it has acquired into an opportunity to serve more everyday facilities, packaging a new business offer

that covers the disinfection of indoor spaces, the treatment of priority outdoor areas, the securing of the air-handling systems and the flushing and disinfection of water networks. One of the first clients was the French defense giant Naval Group. The team has been in action since the earliest days of the pandemic in France, with deep biocleaning at the Naval Group’s headquarters as well as strategic sites in Brest, L’Île Longue, Indret, Ruelle,

Bagneux, Toulon and Saint-Tropez, managed by Défense Environnement Services, a joint venture between Veolia and Naval Group. SARP, another Veolia subsidiary acting as DES’s subcontractor, regularly disinfected Naval Group’s locker rooms on the Toulon site. The adaptation for Naval Group has delivered some other benefits, too: the deep biocleaning of air-conditioning vents has improved air-conditioning efficiency and reduced energy costs.

CLINICAL OR DOMESTIC? VEOLIA EXPERTISE CUTS THROUGH THE WASTE DEBATE

As a clinical waste contractor, Veolia delivered logistic and strategic support to its health clients and the government throughout the Covid-19 pandemic. Tim Lee, Veolia’s National Sales & Business Development Manager — Health Industrials, Australia and New Zealand, is also chair of the Australian Biohazard Waste Industry group, which, he says, aimed to provide pragmatic and considered advice to government, industry and frontline healthcare staff. At the early stages of the pandemic, in Victoria and South Australia for example, the definition of Covid-19 waste streams was complex, with variances

across the accepted and unaccepted waste streams from site to site. “We felt that there was room to help the industry and our customers align definitions and streamline processes around biohazardous waste management in relation to Covid-19,” says Lee. “Our aim was to put in some very simple and practical measures for frontline staff to take so they could feel protected and that Covid-19 waste was prioritized properly,” says Lee. The PPE-heavy waste consisted mainly of masks and gowns that were problematic for clinical waste shredders to process. “Our commitment to the safety of our customers and

the community was that untreated landfilling was not suitable, so we applied for new storage licenses to cope with the increased demand and slower processing times,” says Lee. For its customer focus and support during the crisis, Veolia received the “Above and Beyond” award from South Australia Health on November 12. Reflecting on the early weeks of the pandemic, Lee says, “It was uncharted territory, so we took an evidence-based approach, delivering flexible workforce solutions and working closely with our customers to deliver safe, sustainable and cost-effective treatment and recovery.”



FRONTLINE

Making a difference for Coca-Cola FEMSA

When Veolia began a new contract with Coca-Cola FEMSA in Colombia earlier this year, not only did it have to implement it without disruption, it had to do so during a Covid lockdown.

28/29

No one would have believed in the last months of 2019 that Veolia would start new recycling and energy contracts with Coca-Cola FEMSA Colombia in 2020 during a lockdown caused by a global pandemic. But that is exactly what happened. In Colombia, the government implemented very strict restrictions in March and did not lift the lockdown until September 1. “We began operations on April 1 to provide services nationwide to Coca-Cola FEMSA in the midst of an adverse environment,” says Veolia in Colombia’s Chief Executive Officer, Oscar Garcia. “Covid-19 imposed a great challenge for us that we did not foresee. We began operations in a very complex and adverse landscape, where we had to hire 78

employees amidst mobility and availability difficulties. But thanks to the right definition and identification of profiles, biosafety measures (including PCR testing), and plans to guarantee continuity defined by Veolia, we were able to carry out operations that meet the high standards and demands of the food and beverage sector.”

Normal times

When Veolia in Colombia started bidding for the contract 15 months before it was due to begin, Coca-Cola FEMSA wanted a total waste management service that would serve its seven bottling plants and 19 distribution centers across Colombia. After winning a commercial bidding contract based on its technical expertise,

value for money and alignment with Coca-Cola FEMSA’s goals, Veolia planned to introduce a solution where all the materials generated during the production process in the bottling plant, such as paper, wood, glass and steel, would be transformed into new elements, such as toilet paper, wooden pallets, glass windows and structural steel. It would all be traceable and recycled locally as much as possible, while being competitively priced. Veolia would also deal with any hazardous waste such as industrial chemicals and containers from the manufacturing sites.

Trigeneration from a single source

Plans were also being developed — and are continuing despite Covid restrictions — for an energy self-sufficiency project in the

ISSUE AT STAKE

Starting a major new contract with Coca-Cola FEMSA Colombia during the Covid-19 pandemic.

OBJECTIVES

Introducing a recycling and energy solution for Coca-Cola FEMSA Colombia.

VEOLIA SOLUTION

Activating the continuity plan and re-organizing the teams in order to successfully meet Coca-Cola FEMSA’s recycling and energy needs with the extra challenge of a Covid lockdown.





KEY FIGURES FOR THE VEOLIA COLOMBIA CONTRACT WITH COCA-COLA FEMSA

- 7 Coca-Cola FEMSA bottling plants in Colombia and 19 Coca-Cola FEMSA distribution centers in Colombia
- 78 Veolia employees embedded in these Coca-Cola FEMSA facilities
- More than 1,000 metric tons of material - including glass, paper, metal and wood - transformed from April to August 2020

production process at Coca-Cola FEMSA's Barranquilla plant, as part of a contract signed in 2019. This involves the trigeneration of electrical energy, process steam and cold water from a single fuel source, in this case natural gas. The electrical energy will be produced by two 1475-kw generators. With the exhaust gases from the generators, water will be preheated to produce steam through an industrial boiler. The cooling water from the radiators will be used for chilling purposes via an absorption chiller.

Covid-19 rapid response

Flawlessly implementing the service was always Veolia in Colombia's goal. During normal times, this would require Veolia's expertise in ensuring there was no disruption to the client, but with Covid-19, this process required additional flexibility, a rapid response and resourcefulness from the Veolia team. "Without a doubt, the situation resulting from the pandemic brought enormous challenges for everyone," says Coca-Cola FEMSA Colombia Supply Manager, Camilo Rodriguez. "For Coca-Cola FEMSA, it was key that Veolia understood our needs and could adapt its operation and business model to the new reality we are living. The alignment and control of all the materials we generate has been very important." Despite the situation, Veolia met the recycling contract targets required by

Coca-Cola FEMSA Colombia without disruption to its business. "Veolia is a strategic partner that understands the dynamism of this market and is able — through its experience and measurement tools — to deliver an impeccable waste management service," adds Camilo Rodriguez. "One of the key points was how Veolia adapted to the pandemic. It was agile to start operations and make a connection in the middle of a difficult situation." For Veolia, implementing this new contract during the Covid-19 lockdown has been a learning experience. Oscar Garcia explains: "Veolia in Colombia sought to respond to the crisis quickly based on two principles: maintaining flawless

operations for our customers and protecting the health and safety of our employees with all the necessary biosecurity measures. To this end, we learned to make quicker decisions by empowering our staff and seeking to quickly understand changes in the market. In the case of Coca-Cola FEMSA, its consumers' consumption patterns changed in such a way that, for example, the consumption of water and other products in family-sized containers increased, which forced us to make rapid changes to the collection center processes. In some cases, prices had to be renegotiated for the sale of materials. We quickly adapted our operating processes in response to the customer's request." ■

TRIGENERATION WITH BASF IN FINLAND

Veolia is showing the value of collaboration, working with the chemicals company BASF to build a trigeneration plant in Finland. Veolia's Finnish subsidiary, STEP, will finance, build and operate a new plant to deliver industrial utilities to BASF's chemicals plant in Harjavalta. Under the agreement, STEP will construct a new steam, water and compressed air plant with associated infrastructure in

Harjavalta industrial park, where BASF has established a cluster to produce raw materials for electric vehicle batteries. The contract is worth almost €240 million and represents an important milestone in Veolia's Impact 2023 strategic plan. STEP's Senior Vice-President of Utility Solutions, Tomi Ihalainen says: "This is a fantastic vote of confidence from BASF and further

confirmation of our ability to develop solutions that help optimize our clients' costs while providing a lower carbon footprint. It is also an honor for STEP and Veolia to be part of developing the battery cluster in Harjavalta. Our new facility will make a direct contribution toward making electric vehicles part of everyday life for an increasing share of the world's population in the future."



INTERVIEW WITH CAMILO RODRIGUEZ, SUPPLY MANAGER AT COCA-COLA FEMSA COLOMBIA "Shared goals"

Globally, Coca-Cola FEMSA and Veolia share the goal of being a key part of the circular economy and this is integral to the new contract in Colombia. "At Coca-Cola FEMSA, we are committed to the global objective of not only collecting and recycling 100% of our packaging material placed on the market by the year 2030 but also properly managing the usable materials that we utilize in our operations," says Coca-Cola FEMSA Colombia Supply Manager, Camilo Rodriguez. "To this end, it is key to work on developing strategic alliances that allow us to give a new lease of life to the waste derived from our production." For Veolia in Colombia, this means a focus on treating the usable materials generated by Coca-Cola FEMSA's production process as sustainably as possible. "Our main effort is based on unifying operations at a national level, ensuring that the materials received go to the final transformer. Our greatest challenge today is optimizing the value chains, seeking the greatest value for the client and ourselves. With this in mind, we work with traditional recycling networks to identify best practices for transforming materials." This means that Veolia in Colombia uses its expertise and network of recycling facilities and markets to ensure that materials are recycled as sustainably as possible as part of the circular economy.



FRONTLINE

Marine effluent discharge: an update that changes everything

Viewed as one of the hubs of global alumina production, the Alteo plant located in Gardanne (Bouches-du-Rhône) hit the headlines several years ago with its red sludge, which it has since stopped discharging into the sea. Coming under criticism once again for its industrial water — which also ends up in the Mediterranean, it turned to Veolia, which came up with a biological treatment unit using bacteria to break down suspended organic matter. A first in more ways than one.

Sormiou and its white sandy beach, crystal-clear water and almost century-old huts where time seems to stand still. Sugiton and its famous “Le Torpilleur” torpedo boat-shaped rock, from which thrill-seekers eagerly dive into the sea. En-Vau, whose towering cliffs are worth the two-hour walk from Cassis. There is an endless list of these enchanting names that delight fans of the

Mediterranean all year round and continue to play a starring role on the region’s postcards. Created in 2012, Calanques National Park is tasked with protecting and preserving these gems. In 2015, this role in safeguarding natural land and marine heritage was instrumental in stopping Alteo from discharging bauxite residue, which for decades used to end up off the coast of Cassis. Following this infamous “red sludge”

episode over which so much ink was spilled, the alumina production plant has continued its efforts, acquiring two effluent treatment plants. The first self-managed plant was inaugurated in 2019. Its little sister is none other than a solution devised by Veolia’s teams. The aim is to bring the quality of its water up to standard, a move that was “quite simply vital. Plainly speaking, we were threatened with a prefectural



ISSUE AT STAKE

Improving the quality of Alteo’s effluents before they are discharged into the sea in Calanques National Park, in order to meet the most demanding standards.

OBJECTIVE

Provide a sustainable solution for a long-standing manufacturer in the Provence-Alpes-Côte d’Azur region threatened with closure by a prefectural decree.

VEOLIA SOLUTION

A biological treatment plant installed on site that provides a rapid response, allowing Alteo to demonstrate its ability to maintain its presence in the region with future-oriented solutions.



KEY FIGURES

- The two plants have a treatment capacity of **300m³ of water per hour**.
- Calanques National Park welcomes between **1.5 and 2 million visitors** (by land and sea) each year.
- There are **60 patrimonial marine species** and **140 terrestrial animal and plant species** protected in Calanques National Park.

decree that could have put a complete stop to our activity,” recalls Frédéric Ramé. For Alteo’s CEO and his team, it was therefore “crucial to find a partner specializing in water treatment able to implement a previously unheard-of solution in our industry. And all this within a very tight timeframe.”

A comprehensive turnkey solution

Industrial effluents sufficiently clean and oxygenated to be discharged all year round, whatever their volume or grade: for many long months, this was the goal for Anne-Laure Galmel, Project Manager for the Mediterranean region at Veolia France Water. “Set up right at the heart of Alteo’s long-standing site, the treatment plant that we have created runs on biomass. In other words, we have reproduced what happens in nature, using bacteria that ‘eat’ pollution.” This is followed by a physico-chemical treatment for decantation and another ‘finishing’ treatment to remove any remaining suspended matter on filters. What prompted Alteo to choose Veolia’s proposal? “The fact that it was a turnkey solution. Because, over and above the technology, they talked about implementing and managing the site, constant support, and guaranteed operation/maintenance for three years,” says a delighted Frédéric Ramé.

Effective collaboration

The solution’s robustness, longevity and expertise are due to the fact that it very

quickly became the focus of concerted efforts between the Business Support and Performance division, France Water’s Technical Division, OTV DBI (Design & Build for Industry) and the Bouches-du-Rhône - Val de Durance region for Veolia, and Alteo. An initial phase from late 2016 to late 2018 allowed two pilots to be rolled out, which were tested on site for two months in 2018. “Having such seasoned and consistent contacts — including a Marine discharge project manager accustomed to environmental problems — made our collaboration with Alteo much smoother. We felt that they were really motivated to implement the project,” praises Anne-Laure Galmel. In early 2019, Veolia presented a preliminary draft of the solution that ultimately convinced its partner. In the end, it took fourteen months, lockdown included,

to design and build the facilities commissioned over the summer. “It was a complicated situation, but all those involved were able to rise to the challenge. Like us, Veolia’s teams adapted. Their dedication and ability to make the right decisions played a key role,” confirms Frédéric Ramé. The result: discharge water of unprecedented quality. “It’s a first, both for Veolia, which hadn’t treated this type of effluent before, as well as the industry, which had never before achieved such high-quality water exiting the plant. Since last July, we are well below the required thresholds,” observes Anne-Laure Galmel, who hopes that this project will inspire other entities in the Group. In the meantime, beach hut dwellers, divers and walkers in Calanques National Park can sleep soundly... ■

CHINA: ARTIFICIAL INTELLIGENCE IN THE SERVICE OF WATER QUALITY

The time taken to check the water stored in cisterns (secondary supply network) has been reduced from 10-20 seconds to... 0.49 seconds. This performance leap is down to the AI Audit System, making it easier to clean the tanks managed by urban communities in the district of Pudong (Shanghai). This concept designed by Shanghai Pudong Veolia Water Corporate Limited relies

on artificial intelligence (AI) to analyze the photos from the water tanks. Set up last April — right in the middle of the health crisis — and operating non-stop, this verification system helps improve the cleaning work’s organization and — logically — its efficacy. This has led to a 10.22% rise in the cleaning operations’ success rate and a qualified rate of water quality after cleaning of 100%!

It has been a godsend for this region with over five million inhabitants, where regulations stipulate that water tanks must be cleaned twice a year. Since the introduction of this audit system accelerated by AI, no fewer than 27,000 tanks have been checked. It’s no surprise that the city of Shanghai is planning to adopt this solution for all its check-ups...



INTERVIEW WITH FRANÇOIS BLAND, DIRECTOR OF CALANQUES NATIONAL PARK

“Continued efforts”



After years of discord about marine discharges, are you now entirely satisfied with the solutions implemented?
F.B.: It is true that Alteo’s activity has always crystallized tensions and questions regarding the impact

of marine discharge on pollution and human health. Calanques National Park is a new regional stakeholder and since its creation has been part of the history of major industrial pollution linked to waste disposal by the Gardanne alumina plant. In 2014, its Board of Directors imposed a drastic reduction in pollution and decreed that the plant’s discharge at the heart of the national park’s marine area should be made compliant within six years. This goal has now been met and tensions have relatively eased. The results are therefore unquestionably encouraging. All the same, the National Park continues to strive for strong, rapid progress. The treatment plant installed by Veolia on Alteo’s site proves that industry can adapt, and this type of integrated, high-performance and

comprehensive solution could be applied elsewhere.

How does this industrial wastewater biological treatment unit guarantee an essential activity for the local economy, while protecting Calanques National Park’s environmental heritage?
F.B.: First of all, it shows that a protected area can be part of a major region, taking into account its history and economic life. By avoiding positioning itself ‘as a matter of principle’ against any discharges — which would have meant closing the Gardanne site, the National Park showed that its action took socio-ecological interdependencies into account, quickly leaning toward a zero pollutant discharge solution. The economy and the ecology are not in opposition and we must welcome

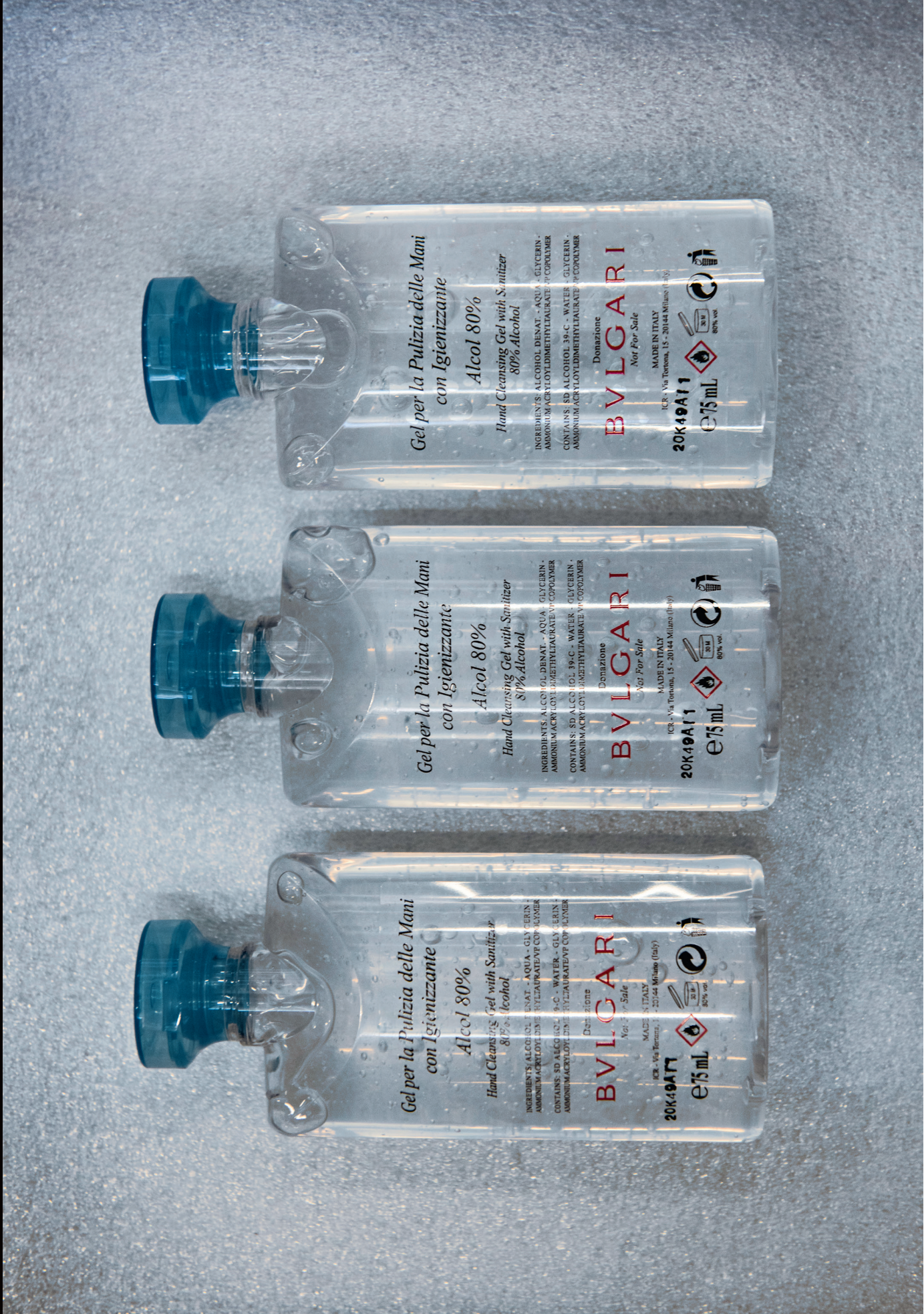
manufacturers’ efforts to adapt their facilities, without calling into question their performance, when considering the marine environment.

Do you think that the Alteo-Veolia project can be duplicated?
F.B.: I think that Alteo’s initiative can become a benchmark both in terms of the approach and developing the techniques. The National Park’s context allowed things to evolve quickly. It made it essential to research and implement the best techniques available, which can now be exported to plants treating the same types of ore. Calanques National Park’s long-term goals? Continuing to work with Alteo, why not aim for zero marine discharge by pairing alumina production with recycling water in the plant...

The New Italian Renaissance

Severely hit last March by the Covid-19 pandemic, Italy is not throwing in the towel. Despite an extremely strict lockdown, its economy is bearing up thanks to the adaptability of its key sectors: design, food, fashion, marble, automobile, etc. It is continuing production despite it all, applying all its energy and ingenuity to keeping these stalwarts of the Italian economy alive. Keeping going, yes, but not at the cost of a resurgence of the epidemic. Businesses have had to adapt in order to start up production again while keeping protective measures in place. Some have changed how their work is organized, getting some of their workers to work in the morning and others in the afternoon to ensure adequate physical distancing. Others set up crowdfunding to purchase ventilators for the local hospital. Revitalizing industry also means exploring new markets, such as Russia and China. Despite the difficult circumstances, there is a sense of energy and optimism. Renaissance is in Italy's DNA.

Photographer: Carlo Bevilacqua



Above. The jeweler Bulgari offered hundreds of thousands of bottles of hand sanitizer to the country's hospitals. They were all produced in the Italian factories owned by ICR (Industrie Cosmetiche Riunite), Bulgari's partner company in Lodi (Lombardy).



Top. The leather goods manufacturer Santoni launched a crowdfunding initiative to purchase ventilators for local hospitals and implemented stringent safety measures in its workshops: here, in Corridonia (Macerata region in the east of the country), it set up a considerable distance between the cutting, dyeing and washing stations.
Bottom. Carrara white marble is one of the best-known and most prestigious in the world. Even when they are working outdoors, workers follow all the Covid-19 precautions: distancing, mask wearing, etc.



Top. Art is a refuge in difficult times. During the epidemic, the restoration work on masterpieces continues, such as “The Assumption of the Virgin with Saints Benedict, Thomas the Apostle and Julian” by Sandro Botticelli.
Bottom. The car manufacturer Dallara, based in Parma, is producing a road version of its racing cars. The company is planning to build 500 of them over the next three years.



CARLO BEVILACQUA

Bearing witness to Italian optimism

This report came into being during the first lockdown in March. “Lots of photographers showed the dramatic sides to the epidemic,” states Carlo Bevilacqua. “I wanted to offer a different perspective, such as the measures taken to contend with Covid-19. I also wanted to understand how the people affected by this crisis could bounce back after experiencing such terrible things.” To his surprise, the people that he met were extremely positive. Worried, of course, but ready to rise to the challenge posed by this unprecedented situation. Impressed,

the photographer decided to depict this fight, traveling around the country. The photoreport was shot under very strange conditions, with deserted streets and hard-won photography permits due to the contamination risks. Carlo Bevilacqua likes to shoot in natural light... which is just as well, as there is no shortage of it in these industries! He has long discussions with employees, asking them to explain what they are doing, the different phases of their work, as well as how they feel.

Looking for humanity

This photoreport differs from his usual choice of subject. However, last spring, it was

impossible to offer his favorite topics: the pandemic was on everyone’s minds and lips. So, like the workers that he photographed, Carlo Bevilacqua adapted. “Usually, I’m interested in gender fluidity in traditional cultures,” he states. “I do reports on these cultures in India, Panama and Mexico.” He also reports on utopian communities and hermits. “You find a lot of humanity in these people,” he points out. “I like to work on nuances and ‘borderline’ people and show the world another point of view. For me, photography is the way to get to know the planet I live on better.” It comes as no surprise that a photographer particularly interested in people outside the norm has been able to capture an exceptional situation so well!

BIO

Carlo Bevilacqua came to photography by chance. As a young man, he was friends with many artists, and photography proved to be the medium that suited him best. He still remembers his first shot: light reflecting in a puddle on the street. The French photographer Robert Doisneau was his role model. But his greatest source of inspiration was classical painters. He set off to work in Palermo, then Milan, both in advertising and in media stories, and also makes television documentaries.



Top. A smart indoor and outdoor lighting designer, the company iGuzzini is continuing its production for its clients in 92 countries, while putting in place the necessary measures to protect its staff from the risks of contamination at its Recanati site.
Bottom. The Nonino distilleries in Pavia di Udine extract alcohol from wine using an artisan process. The stills — under maintenance — play a key role in preserving the aromas and fragrances.

Veolia's digitalization with a human face

On the strength of a digital transformation that is already well underway, Veolia has adapted to the constraints of the Covid-19 crisis with agility, performance and reliability, with no interruption to its essential services management. The Group has successfully readjusted its practices, demonstrating its ability — both on a human and technological level — to be a benchmark player in the ecological transformation.

The Covid-19 health crisis has confirmed to all the urgent need for a global ecological transition. Regions' future will be resilient and carbon-free, or there will be no future at all. Whether local authorities, tertiary or industrial companies, Veolia's clients have fully grasped this, and we are now witnessing a reinforcement of the green component in all economic recovery plans. This is good news for Veolia, whose ambition — with its Impact 2023 strategic program — is precisely to be the leader of the ecological transformation. "We are now part of the solutions. Our job is to turn the collective will and allocated budgets into concrete projects to make the transition possible," Estelle Brachlianoff, Group Chief Operating Officer at Veolia, reminds us.

Guaranteeing service continuity during the crisis

While providing essential services is an obligation, doing so remotely can prove complex and any failure entails very heavy consequences. In a widespread lockdown situation, the Group's digital tools proved indispensable to maintaining essential services for many areas hit by

the health crisis. "As the digital transformation had kicked off in 2012, the technical environment was ready and we did not have to purchase any new systems," states Didier Bove, Group Chief Information Officer at Veolia. For several years, the SATAWAD (secure, anytime, anywhere, any device) program has made it possible to recover, aggregate and analyze data from numerous sites, entirely securely from anywhere. Cloud-based office automation solutions have also long made it possible to work remotely and roll out projects such as Hubgrade and Aquavista, or monitor the operational and ecological performance of clients' sites online. "Veolia's technological edge allows it to deal with the unexpected more calmly than other companies," remarks Didier Bove.

In the midst of the pandemic, Veolia was thus able to mobilize all its resources, both human and technological, to maintain the continuity of its operations — except for public construction projects made impossible by the government directives linked to the public health state of emergency. "The word 'essential' has become key," highlights Estelle



“It’s all linked. Digital is not something in parallel. It enriches all our business lines.”

Estelle Brachlianoff

MEETING THE CHALLENGE OF COLLABORATING AT A DISTANCE OF 5,000 KM

Just before the health crisis, a drinking water plant recently installed in Minya, Egypt, by the German team from Veolia Water Technologies (VWT) was put on hold at the request of the client, a global food and beverage giant. However, seeing its orders skyrocket from the first widespread lockdown measures, the client asked for the plant to be urgently started up. Unable to travel, the German experts turned to their Egyptian colleagues, who were on site but initially did not have the necessary skills to single-handedly perform such a complex task. The two teams therefore set up an unprecedented collaboration, made possible thanks to digital tools. “Covid-19 left us with few options, so we had to find a new way of working across borders; the first test was managing to draw up a virtual working plan,” says Sherif Manem from VWT Egypt. Guided and supported from Germany, the Egyptian technicians benefited from the know-how and expertise of their European colleagues... based 5,000 kilometers away. This international task force took just 28 days to get the plant up and running. A feat in this unprecedented situation, made possible thanks to the power of digital, the daring of Veolia’s business units, and the combination of international expertise and local experience.

x5

Increase in video conferences during the crisis

teams’ collaborative capacity. “We had to establish rules collectively, throughout the lockdown period, but we rose to the challenge,” states Didier Bove. In this instance, the teams demonstrated that they were able to support each other remotely with complex operations, with no loss of operational performance, relying on all the resources at their disposal thanks to digital. For example, peer reviews — collegial consultations over several days traditionally bringing together experts from all countries to a site to challenge original or sensitive projects — took place entirely online for the first time! “For the construction of the hazardous waste incinerator for Sadara in the Middle East, some thirty experts demonstrated that they could effectively

Brachlianoff in this respect. “Over and above the services that we generally think of — drinking water and wastewater, household waste, etc., other areas of activity proved to be just as indispensable: treating hazardous waste from the pharmaceutical industry or hospitals, for instance, without which drug production or health security couldn’t be guaranteed.” Echoing the Impact 2023 commitments, Veolia is thus positioning itself coming out of the crisis as the ‘glocal’ partner — intimately familiar with the local area and its constraints while enjoying the power of a global Group — able to improve its clients’ capacity for resilience and effectively support them through all sorts of crises.

Rising to challenges together: #UnitedThanksToDigital

The Veolia teams learned to master their digital tools from 2012 onwards: using Google Workspace, turning to video conferences, utilizing the cloud, etc. were the norm in the Group, long before the crisis. However, there was still some way to go to learn to unlock — remotely — the

offer their expertise, collaborate and challenge each other remotely,” recounts Pierre Ribaute, Executive Vice President Business Support & Performance at Veolia.

Balancing in-person work and remote control

By imposing major constraints, the crisis drove Veolia to accelerate its digital transformation. The proof: a certain number of tools or practices have now become standard (training its clients online, using electronic signatures, etc.). For clients, it was a matter of taking advantage of cloud technology and overcoming certain fears in terms of relocating their data. Veolia’s decision to use

platforms renowned for their robustness — Google, Microsoft — has also paid off when it comes to blocking cyber attacks, which have shot up during the crisis: hacking attempts, malicious emails, etc. “Of course, we need to have a great deal of humility in this area, but up to now we have been able to defend our systems,” states Didier Bove.

Things have also changed for Veolia. “We have psychologically broken down barriers and tried out everything we could think of, prioritizing online over in-person activities. We have torn down walls,” states Pierre Ribaute. “We know, for example, that we are able to conduct remote energy audits by

using augmented reality, relying on the teams on the premises equipped with Google glasses, connected by computers to experts at the other end of the world,” he explains. “But this only works well because the teams know and trust each other. The connections made in person remain irreplaceable.”

This would suggest that in the post-crisis period Veolia will come to strike a sound balance between remote control and in-person interventions. A further step forward in reducing its carbon footprint.

Rapidly reacting and adapting

Managing a health crisis on the scale of



OUTFRONT

the one we are experiencing requires being able to call ourselves into question and react extremely quickly. For instance, a comprehensive health, hygiene and environmental offering for buildings, combining indoor air quality, water system safety and disinfecting the premises, was created, marketed and rolled out in just three weeks (see boxed text, page 26). “The pace accelerated in a number of fields,” explains Estelle Brachlianoff. “For waste collection, for example, lockdown meant that we had to entirely rearrange the rounds. Digital tools allowed this adaptation to be made almost instantaneously.” Another telling example is the closure of waste drop-off centers. The Veolia teams realized that many small entrepreneurs, artisans or second-hand parts dealers, who generate or use waste, no longer had access to them and were therefore deprived of their livelihoods. In response, they were able to develop — in the space of a hackathon weekend — software for booking

appointments with the waste drop-off center online. “In this respect, digital represents a strength because it allows you to experiment and take risks at low cost, adopting a fast and cheap approach,” continues Estelle Brachlianoff. The Group has been able to work in an agile and iterative way, testing and then readapting its solutions in real time with the client to help it handle the situation. “During the crisis, Veolia has amply demonstrated its capacity and vision to support regions’ resilience,” confirms Pierre Ribaute.

Making digital work for people

The Group’s digital strategy underpins the Impact 2023 plan’s success and uses data to further the ecological transformation. A far cry from the image of the ‘great replacement’ conveyed by automation, digital bolsters Veolia’s business lines, all the better to support people. “Two thirds of our employees are actually on the ground,” Estelle Brachlianoff reminds us. “Waste collection cannot be done remotely, for

35

Hubgrade Centers
in 22 countries

example. However, IT and artificial intelligence can improve the performance of these services, along with the comfort and safety of our employees.”

Veolia’s water, energy and waste management specialists are able to optimize their clients’ operational and economic performance and reduce their environmental impacts in real time thanks to the new remote control centers fed by data: Hubgrade platforms, which are growing in number in the Group’s operational countries. “In the future, it’s a matter of avoiding the thankless tasks and ▶

“During the crisis, Veolia has amply demonstrated its capacity and vision to support regions’ resilience.”

Pierre Ribaute

**BLOCKCHAIN IS REVOLUTIONIZING THE PRACTICE OF REVERSE AUCTIONS**

In the context of the global health crisis, the procurement divisions are on the frontline, exposed to the risk of a breakdown in transactions in the supply chain. A major risk that can prove extremely expensive: when cities are in lockdown, any direct negotiations with suppliers become impossible and procurements are interrupted de facto. These risks are now controlled at Veolia thanks to the development of a reverse auction¹ digital platform dedicated to calls for tender, based on blockchain technology², in China in the midst of the pandemic. This

innovation proved crucial at the heart of the Covid-19 crisis: call for tender mechanisms — especially those linked to the supply of coal — were able to take place entirely online. In the end, the platform combines every advantage: security, traceability and reduced-cost transactions. This digital tool not only saves on administrative fees, but it guarantees that the local teams obtain the most competitive prices on the free market. For the platform makes it possible to compare and rank the bids from all the potential

suppliers, automatically and at the time of the transaction. As each of them is given a random identity, the risk of collusion (and thus price distortion) is minimized. Finally, as the tool is fully owned by Veolia, its use does not incur any license fees. Following three incident-free auctions since the beginning of the health crisis, the method will be extended to other calls for tender for other raw materials. It enables Veolia to be prepared for other potential crisis situations, where face-to-face negotiations would be once again impossible.

¹ In a reverse auction, the winner is the one who offers the lowest price. A major lever of procurement performance in a digital world, this auction system pits suppliers against each other, incorporating several complex criteria of choice from the call for tender, and secures the negotiations and contracting from the beginning of supplier relations.

² Blockchain is a secure and transparent data storage and transmission technology that functions without a central authority. Technically speaking, it is a distributed database whose information and internal links to the database are validated and grouped into blocks at regular time intervals, forming a chain. The whole process is secured by cryptography.

keeping human intervention for where it is meaningful, without there being fewer employees throughout the project,” highlights Estelle Brachlianoff.

When digital and the ecological transformation go hand in hand

Veolia’s approach links its digital strategy to a multi-faceted performance goal, at once encompassing business, economic, social,

societal and ecological dimensions. The Group also intends to draw on digital to solve a complex equation: maintaining economic growth, improving its employees’ working conditions and supporting them in the transformation of their profession, and increasing its clients’ productivity, while reducing costs and improving its environmental footprint.

To this end, the IT team has rolled out its

own strategic plan to support Impact 2023’s goals. A dozen digital offerings, currently under development, aim to support operational efficiency and the development of business lines seen as key for the future, such as hazardous waste management, CO₂ capture, and plastics recycling.

“It’s all linked. Digital is not something in parallel. It enriches all our business lines and everything that we do for our clients must help roll out the new Impact 2023 strategy. The merger with Suez is in the same vein. The aim is to take the best of our two worlds: by combining our know-how and technologies, we will use the acceleration of digitalization to benefit the ecological transformation. Everything must help resource the world,” concludes Estelle Brachlianoff. ■

“Veolia’s technological edge allows it to deal with the unexpected more calmly than other companies.”

Didier Bove



“London Distancing”

In London’s West End, a bustling cultural, entertainment and shopping hub reduced to silence during lockdown and deprived of some of its 200 million annual visitors, the gradual reopening of venues, restaurants, bars and shops has been accompanied by a necessary reinvention of civic life with full safety measures in place.



Supported by its local partners Heart of London Business Alliance and New West End Company, Veolia — the waste management and urban cleaning services provider for the district of Westminster in central London — launched a unique program recruiting Social Distancing Ambassadors (SDAs) to assist the neighborhood’s visitors with the easing of lockdown. From mid-June, 15 SDAs facing social or professional difficulties, recommended by Westminster City Council’s recruitment service, joined the local teams on the streets of this area encompassing Leicester Square, Piccadilly Circus, Covent Garden, Oxford Circus and Regent Street. Given health and safety training by Veolia to ensure both their own and others’ protection, these ambassadors can envisage a number of job opportunities. Tasked with an unprecedented mediation role, the SDAs are responsible for reminding people to follow social distancing when waiting in line and managing pedestrian traffic in these very busy streets. On duty seven days a week, they are also in charge of refilling the hand sanitizer bottles set up in the sector’s 34 stations, making it easier for people to disinfect their hands at any time. Between handing out masks and gloves, they remind passers-by that this protective equipment must be disposed of in ordinary waste bins after use, as it is not biodegradable or recyclable. Ultimately, users are supportive of this unique public health scheme, which is helping restore confidence and thus aid the economic recovery. A strong indicator is that visitor numbers in the West End are picking up, reaching 45% of the usual rate in mid-September. Yet another reason to extend the SDA experience until March 31, 2021.

IN BRIEF

- ▶ London’s West End districts are primarily managed by the City of Westminster (255,324 inhabitants).
- ▶ Two private organizations — New West End Company (NWE) for the north and Heart of London Business Alliance (HOLBA) for the south of the West End — bring together 1,200 businesses (shops, restaurants, hotels, entertainment venues, etc.) employing 190,000 workers.
- ▶ Veolia, NWE and HOLBA are driving the West End’s sustainable social and economic development, prioritizing the health and well-being of locals.

VIGIE COVID-19: better monitoring the epidemic's resurgence

Having taken advantage of the experience acquired since April, Veolia created and developed VIGIE COVID-19 in France, an early warning system for the presence of traces of coronavirus SARS-CoV-2 in wastewater, an indirect reflection of the virus' circulation in the population. Its aim is to give local authorities a new indicator of choice to better anticipate and monitor epidemiological trends in their region.

A warning indicator, this offer is an additional tool in local authorities' health arsenal to anticipate hospitalization peaks by almost two weeks on average. Of course, a strict correlation has not been established between the concentration of traces of the virus entering the wastewater treatment plant and the epidemic's development in the population. However, the international scientific literature generally agrees that it is possible to detect the virus' genetic material in wastewater up to several weeks before the spike in hospitalizations. It makes a good addition to more targeted epidemiological measurement tools that is all the more representative as it takes the entire population into account (including people who have not been tested or are asymptomatic). To develop its tool, keen above all to protect its employees at wastewater treatment facilities, Veolia relied on its Research & Innovation (R&I) laboratory — at the forefront of environmental microbiological analysis — and on partner laboratories selected by the R&I teams based on criteria concerning the reliability and robustness of their analysis protocols and their results. To convey its expertise, the Group also joined the OBÉPINE network (see boxed text), of which it is a partner. The VIGIE COVID-19 offer therefore combines a detection tool and a dashboard for interpreting and communicating the results. The Group delivers it to local authorities looking to supplement the epidemiological data available on a departmental scale. In the long term, VIGIE COVID-19 could be rolled out to all its public and tertiary sector clients worldwide, possibly incorporating more precise tracing.

OBÉPINE TRACKS THE VIRUS IN WASTEWATER

From April 2020, several laboratories supported by the French Ministry of Higher Education, Research and Innovation launched the OBÉPINE (*OBservatoire ÉPIdémologique daNs les Eaux usées* – Wastewater Epidemiological Observatory) monitoring network. Its mission is to monitor the activity of the virus across France by analyzing samples from over 150 wastewater treatment plants, in order to make forecasts about its circulation. As a provider, Veolia is responsible for its

operational implementation in the forty or so chosen facilities that it manages on behalf of its clients, with their prior agreement. And for the local authorities not selected by the OBÉPINE project, Veolia's VIGIE COVID-19 offer is available as an alternative means of closely monitoring a region.

<https://www.enseignementsup-recherche.gouv.fr/cid152984/suivi-des-traces-de-covid19-dans-les-eaux-usees-le-m.e.s.r.i.-augmente-l-ambition-du-projet-obepine.html>

1 IN WASTEWATER

Infected individuals, whether symptomatic or not, excrete the virus in their feces. Traces of SARS-CoV-2 are therefore found in the wastewater collected by sewer systems that converge in wastewater treatment plants.



2 SAMPLING FROM THE INFLOW TO THE WWTP

Once a week, a sample is taken from the inflow to the wastewater treatment plant. Due to its 24-hour duration, it takes into account effluent variability over the course of the day. The samples are then sent to a partner analytical laboratory.



3 ANALYZING THE SAMPLES IN THE LABORATORY

The samples are analyzed using two techniques, RT-qPCR or ddPCR, which are extremely complex to perform on wastewater. They detect specific fragments of the coronavirus SARS-CoV-2's genome (RNA), whether it is still infectious (active) or not.



4 CONTEXTUALIZATION AND INTERPRETATION OF THE RESULTS

Two imperatives to be taken into account:

- The context of the samples on the ground, to reliably interpret the wastewater virus monitoring results. For example, rainfall may "dilute" their concentration in water, thus distorting the results.
- The gross organic pollution load produced by the agglomeration*, in order to correctly interpret the results for monitoring SARS-CoV-2 in wastewater.

*Each individual produces on average 60 g of organic load per day (BOD₅). Measuring this load makes it possible to evaluate the number of people during the sampling. This will determine if the population sampled is comparable from one week to the next. Finding 10 viruses per liter for 100 people and 10 viruses per liter for 150 people the next week is not comparable.

5 DASHBOARD AND EARLY WARNING

A dashboard, which is accessible online, shows how the wastewater's viral load has changed over time across the region, along with the corresponding warning level. It gives an indication of epidemic trends in the population. The higher the number of people affected by Covid-19, the more the virus is detected in wastewater.



Virtual reality: immersion in remote collaborative work

After revolutionizing the world of video games, this technology is shaking things up in industry, with an increasing number of manufacturers taking a closer look with a view to applying it in their sectors. The benefit of virtual reality? Immersion in a 3D model. Here's a guided tour...



While they have not yet reached maturity, immersive technologies are undergoing experiments offering a glimpse of their full potential. For its première, Veolia Research & Innovation's virtual reality platform (cf. boxed text) accelerated the development of the Saphira™ prototype for treating industrial water. The added extra? Being able to move around virtually in 3D at the heart of a chemical reactor. More recently, R&I offered a 'multi-participant' feature. The aim is to facilitate simultaneous group work in the same virtual scene, which is ideal for remote collaboration. Given the current health situation, this argument is more compelling than ever: "In

practice, when reviewing the design of a pilot, this multi-participant mode has already allowed the participants to move around 360° in a virtual space. They can now interact with others at the same time, using the specific tools integrated into the module," states Jérôme Jossent, a research engineer in the R&I department.

High potential
Extremely expensive just a few years ago — just like augmented reality, which adds virtual elements to a real environment, virtual reality has become much more widespread, even among the general public. The technology is beginning to win people over, with

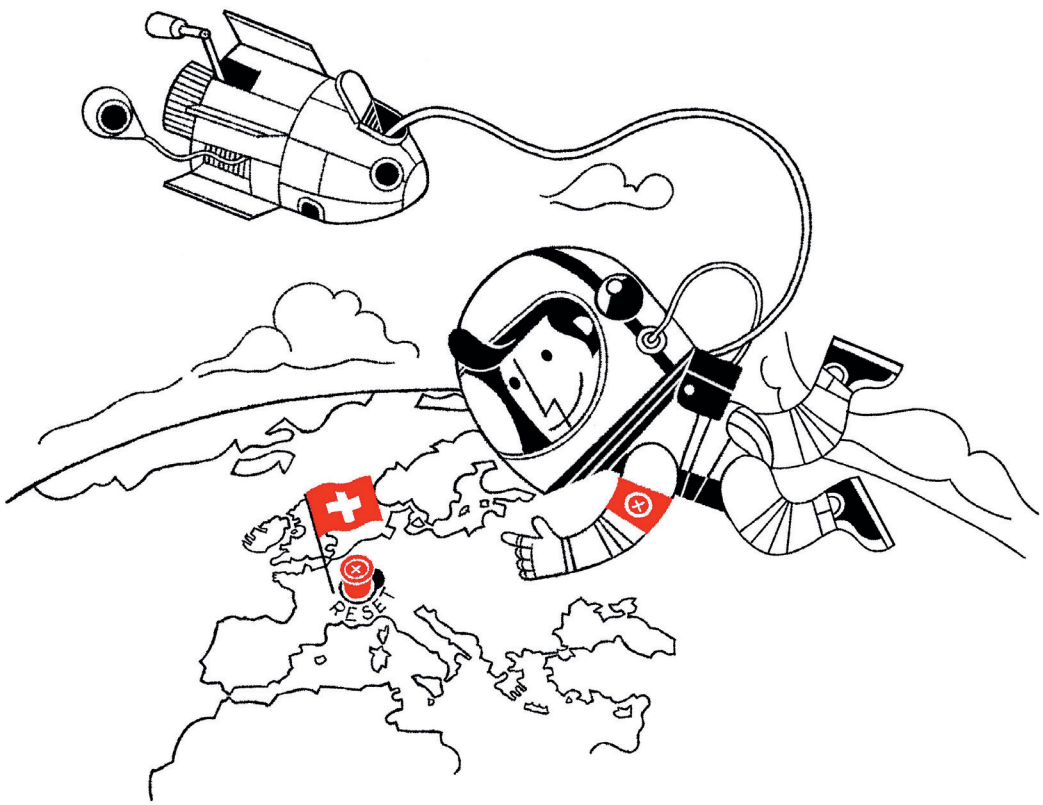
an increasing number of business-friendly uses, such as trade show visits, site reviews, simulations during training, and product presentations. In the long term, might we see Veolia staff swapping their Chromebooks for a virtual reality headset? "Why not," replies Jérôme Jossent. "But we will need to be able to solve some of its specific issues, from ergonomics through the weight of the equipment to the wires, which still restrict movement." Immersive and interactive in one, virtual reality above all proves extremely effective in accompanying changes in certain areas of activity. We certainly haven't heard the last of it!



DIVE INTO VEOLIA'S VIRTUAL REALITY PLATFORM

Accessible to all the Group's entities, the platform designed by R&I forms a common base making it possible to pool efforts and share knowledge and experience in virtual reality. It offers features for creating a 3D scene from a CAD (computer-assisted design) drawing and extended use of digital plans. There is also a toolbox — which is virtual, too — including a tape measure, flashlight, viewfinder and cutter. **The result:** equipped with a headset (HTC Vive), staff can move around in 3D in a preconfigured virtual space!

WEEK OF JANUARY 25, 2021
51ST DAVOS WORLD ECONOMIC FORUM SUMMIT



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