VEOLIA

PLANET

#JUNE 2014

Making the Circular Economy a Reality

Wastewater, a wealth of energy

Dismantling Syria's chemical weapons

Sohar, a new water partnership

Pècs, a city goes 100 % biomass

Yakoutsk, between ice and fog

VEOLIA

TABLE OF CONTENTS

JUNE 2014

03 THE **POST**
by Antoine Frérot

04 CONTRI**BUTORS**
Rhama Al-Mashrafi, Kevin Hurst, Steeve Iuncker, Ellen MacArthur, Savvas Verdis

06 CUR**RENTS**
The news in brief

12 FO**RUM**
Ellen MacArthur et Antoine Frérot: Are we ready for a circular economy?

16 SPOT**LIGHT**
Ajoy Chakraborty, Malik Djafer, Gael Webster

20 FRONT**LINE**
SOHAR, a new water partnership
PÈCS, a city goes 100 % biomass
PORT ARTHUR & ELLESMERE PORT Dismantling Syria's chemical weapons

34 GAL**LERY**
Steeve Iuncker: Yakutsk, between ice and fog

42 OUT**FRONT**
Imagine 2050: Building the future circular economy

47 COM**MUNITY**
Health and safety steps for recyclers in Manila

48 EX**PLAINER**
High-calorific wastewater

50 FUTUR**IST**
The water tree, a refreshing idea

THE **POST**

Antoine Frérot
Chairman and CEO of Veolia

January 25 **The Davos Forum, where discussions and convictions meet.**

This 44th World Economic Forum was the first I had taken part in. On the invitation of the firm McKinsey and in partnership with the Ellen MacArthur Foundation, we drew up an action plan to bring about a change in production systems in order to prevent the overexploitation of raw materials. The new model, which preserves nature while using it, is known as the circular economy. I'm a firm believer in it and I intend to promote it, because it is the only one capable of preventing resources vital to modern economies from becoming exhausted. By creating material, water or energy cycles, this "**other**" economy allows the economy to grow while reducing the resources taken from nature. At Veolia, we are convinced that the waste of today is the resource of tomorrow. The issues at stake linked to this new economy are huge, as domestic and industrial waste represent the 21st century's largest "**mine**" of raw materials. This approach is all the more welcome as modern man cannot continue to live on credit when it comes to the environment. The circular economy – which is not dissimilar to how natural ecosystems function – provides a way of getting out of this deadlock. It allows us to move from a throwaway to a sustainable society.

April 1st **Alongside UNITAID, of course.**

When Bill Gates, co-chair of UNITAID, and Philippe Douste-Blazy, the UN's Under-Secretary-General, decided to take action to promote health in developing countries, it was only natural for Veolia to join them. For defending the environment against wastewater means protecting public health, and providing drinking water means fighting against water-borne diseases. Didn't Pasteur say, "**we drink 90% of our illnesses?**" UNITAID fights against three major pandemics – AIDS, malaria and tuberculosis – and has invested $2.1 billion in 94 countries since it was founded. Can there be improvements to health without access to water and sanitation? Can we effectively fight diseases without collecting waste? Clearly not! This is why I wanted to confirm the Veolia foundation's commitment to the actions that it has launched, whether in Mali, the Congo or the Philippines. Access to drinking water and sanitation, just like waste processing, are some of the best investments that you can make in terms of health!

April 8 **Press conference on mines: a new way of exploiting resources.**

If there is one place that symbolizes resources, it's the mining site. A major consumer of water, the mining industry must comply with strict environmental requirements or find itself being refused permission to exploit deposits. Nowadays, you can no longer open a new mine without providing proof that it will not pollute and that the utmost will be done to reduce water or energy consumption. Last year, the industrial group K+S Potash chose our evaporation-crystallization solutions to be incorporated at the heart of its future potash mine, one of the largest in North America. By recovering the salts and potash dissolved in the effluents, our technology will increase the site's productivity, while reducing its running costs, energy consumption and impact on the natural environment. With our involvement in such a sensitive sector, we are demonstrating to our clients our ability to help them comply with the strictest environmental standards, as well as assist them in their economic development. Veolia's experience with industry players provides daily proof that safeguarding the environment and promoting growth can go hand in hand.

CONTRIBUTORS

Editor in chief
Kevin Hurst

Marketing & Communications Director Veolia UK

One of the great wonders of our world is the diversity of needs and the innovation that is taking place to ensure the future is a more sustainable one.
As the Editor in chief of this first edition of the relaunched Planet it has been my privilege to help assemble a vast array of articles from all corners of the earth encompassing the cold extremes of Siberia to the heat of Oman, where the women and men of Veolia demonstrate how they resource the world on a daily basis.
It is very appropriate that Veolia has chosen the words Resourcing the World in its brand support line as it is perfectly epitomised within the Forum feature where Ellen MacArthur and our own Chairman Antoine Frérot outline the importance of the circular economy and what needs to be undertaken to make the words a reality. This is a space where Veolia have a key role to play.
I genuinely hope you enjoy reading this new Planet magazine as much as I have enjoyed working on it.

Also in this issue

Ellen MacArthur

Sailor and founder of the Ellen MacArthur Foundation

An exceptional sailor, she came to the public's attention when she finished second in the prestigious Vendée Globe race in 2000/2001 and most especially when she broke the record for the fastest solo circumnavigation of the globe in 2005. Through her foundation, she is now committed to promoting a circular economy and eco-design, developing closed-loop production systems and reusable objects.

Savvas Verdis

Senior Research Fellow at LSE Cities, London School of Economics

Savvas Verdis is a Senior Research Fellow at LSE Cities at the London School of Economics and teaches urban development. He consults city and national governments on urban infrastructure strategies and the evaluation of urban projects. His most recent consultation includes an infrastructure feasibility study in the Amsterdam metropolitan area on behalf of the Dutch Government.

Rhama Al-Mashrafi

CEO of Majis Industrial Services Company (Oman)

A civil engineer by training, for 17 years she was the Projects and Planning managing director for a body charged with Oman's industrial development: the Public Establishment for Industrial Estate. Within Oman's State Council, Rhama Al-Mashrafi is a member of the human resources development committee, which is particularly concerned with questions of training, employment and Omanization.

Steeve Iuncker

Photographer

At a time when urban environments under constant pressure are home to over half the world's population, Steeve Iuncker looks to understand what effects extremes may have on humans. His "extreme city" world tour will take him from the coldest through the highest to the most polluted city.

Is a publication of Veolia (38, avenue Kléber – 75116 Paris – France)

Publication Director: Laurent Obadia. Editorial Director: Marine Boulot. Editorial direction: Anne Béchiri, Étienne Collomb, Renée Kaplan. Editor-in-Chief: Kevin Hurst. Image content: Laure Duquesne, Gilles Hureau. With special contributions from: Dominique Boizeau, Caroline Clopet, Martin Curtois, Scott Edwards, Renee Fry, Eva Kucerova, Philippe Langenieux-Villard, Claude Laruelle, Sylvaine Leriquier, Marc Péraudeau, Brune Poirson, Marie-Dorothée Riet-Hucheloup, Andrea Semjén, Justine Shui, Hélène Toury. Copyright: June 2014. ISSN number: 1761-4996. Veolia photo library: George Craig/Veolia North America; Olivier Guerrin; Stéphane Lavoué; Christophe Majani d'Inguimbert; Justin Sutcliffe/Interlinks Image; Munem Wasif/AgenceVU. AP /SIPA; Johner Bildbyra AB; Paul Cooper/Rex/SIPA; Fondation MacArthur; Grainge Photograph; Steeve Iuncker/Agence VU; Lam Duc Hien/Fondation Veolia; Tony McKendrick/Photomakers; Sóki Tamás/MTI; Tetra Images/Andia.

Published by Bords de Loir Art Director: Jean-Jacques Farré. Editorial team: Patricia Coignard, Guillaume Frolet, Hubert Kerneïs, William Mengebier, Paul Sanderson. Cover illustration and p.42: Marion Dionnet. Infographics: Atelier 9 and Philippe Mouche. Mr V illustrations: Mariette Guigal. Coordination: Sylvie Roussel. Production Manager: Caroline Lagaillarde. Printed by: ascencéo-certified PEFC Packaging, sorting and mailing by Log-ins, a disability-friendly company.

PEFC 10-31-1157

MIXTE Papier FSC FSC® C018588

CURRENTS

Heat

€1,025 M

This is how much the cogeneration and heat networks market in Europe will represent by 2019, according to the Frost & Sullivan European Combined Heat and Power for District Heating Market report published in October 2013.
In other words, double the revenue – which amounted to €482.5 M in 2012 – in the space of seven years. In addition, district heating now supports 10% of heating demand and could enjoy 20% growth by 2019.
www.energy.frost.com

Managing water

More reporting for more awareness

Improving water management in industrial processes has become one of the major aims of a growing number of company heads. They are gradually becoming aware of the risks of an industrial failure linked to blue gold that could seriously impact their company's operating results.
This awareness has arisen thanks to new methodological tools allowing a global approach to managing the resource, such as the Water Impact Index or its avatar the True Cost of Water (see p. 10), developed by Veolia.
But much remains to be done, even if manufacturers have adopted a strategic policy at the highest executive level, such as Nestlé Water, in its catchment areas, and Kellogg's, in its analyzis of the lifecycle of maize – a cereal at the heart of its many food products.
This is the observation made by the British not-for-profit organization Carbon Disclosure Project (CDP) in its 2013 global report on the integrated water management practiced by the world's biggest companies. For the association, out of the 184 that answered the questionnaire, only 6% have set a "water" target concerning the regions where they are located, and only 4% with regard to their supply chain.

E-waste

+14% is the likely growth of e-waste collection services in the United States by 2016, as highlighted by an Infiniti Research report. The United States Environmental Protection Agency and the United Nations Environment Programme have enacted rules and regulations to encourage the reuse and recycling of this e-waste in the USA and increase the producer's responsibility. Twenty-four states have already passed corresponding legislation.

Buenos Aires

Keeping its streets clean

From September 2014, Veolia will be responsible for collecting solid household waste and providing urban sanitation services for Zone 1 in Buenos Aires (Retiro, San Nicolás, Puerto Madero, San Telmo, Monserrat and Constitución districts), which represents approximately €500 M over ten years.
In this dense and complex urban area with a concentration of economic and tourist activities, the Veolia group is looking to improve service performance and hygiene by implementing a complete waste containerization system. Already present in eight Latin American countries, where it counts 42 million customers and just under 12,000 employees, Veolia is now consolidating its position in Argentina.

Telex

Partners since 2001, **the Swiss firm Novartis** (the third largest pharmaceutical group in the world) and Veolia have signed a further five-year contract worth €925 M. Veolia will continue to manage the utilities at the Basel production sites along with technical and facilities management services at fifteen of their biggest sites in Europe.

In Kuwait, Veolia has won a €320 M contract to build a seawater desalination plant. Entirely powered by a 1,500-MW gas-fired power plant, from 2016 it will be able to produce over 480 million liters of water per day, i.e. 20% of the oil emirate's desalination capacities.

Greater Lyon, the second largest drinking water service in France in terms of the population served (1.3 million inhabitants across 54 municipalities), has entrusted Veolia with managing its drinking water production and distribution network. This contract is worth €660 M over eight years. Veolia already had an over 80% share in the previous arrangement, concluded in 1987, covering 33 municipalities.

Basra, Iraq

Desalinates its water

Iraq is following in the footsteps of Saudi Arabia and Kuwait. Veolia was awarded a $115 M five-year contract for the construction of a water desalination plant in Basra, the sole point of access to the sea in southern Iraq. This contract incorporates a large-scale partnership with the Japanese conglomerate Hitachi and the Egyptian civil engineering company ArabCo.

Scandinavia

North Cleantech

Veolia and the new technologies promoter Lahti Region Development LADEC Ltd (Finland) are launching a Nordic Innovation Accelerator for a one-year trial period. The aim of this platform is to promote the challenges (calls for innovation) launched by Veolia and benefit from effective sourcing in Scandinavia, a key cleantech region.

Waste conversion

Biomass proves an asset in Canada

Taking up the challenge of producing 500 MW of electric power in various areas of the province, British Columbia has chosen Veolia to finance, build and operate one of the largest biomass plants in Canada, with an electricity capacity of 40 MW, in Fort Saint James. This plant will convert 307,000 metric tons of biomass per year, and will be achieved by Veolia working alongside local forestry firms, sawmills and the American Indian population.
The electricity produced will be sold to BC Hydro&Power Authority, which will serve almost 40,000 households and prevent approximately 95,000 metric tons of CO_2 per year being released – savings equivalent to taking more than 45,000 cars off the road.
Some 250 jobs are set to be created during the construction and 80 during the 30-year operation period. Having already been awarded the Montreal hospital contract – €1.2 billion for energy management over 34 years, Veolia has also won a second contract in Merritt for another 40-MW biomass plant.

Pneumatic

Vacuum waste collection in Paris

It's a first for the French capital. Since October 2013, 600 inhabitants of the eco-friendly Batignolles neighborhood have been using a new waste removal method: automated collection via an underground pneumatic network. This original method has already been implemented in Romainville and Issy-les-Moulineaux in the Paris region. When the recycling bins are full, the system triggers an automated collection in which waste travels at 70 km/hr. through the 5-km underground network. This ultimately leads to a reduction in waste vehicle traffic and the nuisances associated with conventional waste disposal.

Steaming

out the oil

In Carmon Creek, Canada, Shell is developing a heavy oil reservoir with a specific technique that consists in extracting oil by injecting water in the form of steam into the reservoir.
With the aim of producing 80,000 barrels per day and the electricity required for 500,000 people, the oil company is committed to a "zero discharge" policy when it comes to polluted water.
Veolia's engineering and design expertise is allowing it to set up a treatment system in Carmon Creek capable of producing 50,000 metric tons of steam per day, by recycling the water impaired by the oil. In this province of Alberta, the largest area in the world for bitumen extraction, over the past five years Veolia has already won three contracts for treating wastewater from the fields of various oil companies.

"For many decision-makers (...), there is a trade-off whereby fighting climate change means sacrificing economic growth (...) and business revenue. However, we believe that trade-off is a false dilemma. It is possible to have economic growth (...) while fighting climate change. (...) If we can show that is possible, decision-makers can choose more responsible environmental policies."

Felipe Calderón, former President of Mexico and Chair of the Global Commission on the Economy and Climate – New York, 24/09/2013

Las Condes, Chile

Taking care of its waste

The city of Las Condes (284,000 inhabitants) in Chile's Santiago urban area has entrusted Veolia with collecting its solid household waste for a further eight years — and at a total revenue of €40 M.
It is one of the capital's most iconic districts, encompassing most of the diplomatic representations, the headquarters of top national and international companies, along with the country's main universities.
Since 2004, Veolia has also been responsible for collecting bulky items, managing waste drop-off centers and recovering illegally dumped waste.

Measuring value

"True Cost of Water"

Developed by Veolia for its clients, whether public authorities or industrial companies, "True Cost of Water" is an unique tool that helps decision-makers gain a better understanding of water-associated risks, measure their financial impact more effectively and make sustainable strategic decisions, ensuring long-term profitability.
This tool considers three types of costs affecting water and its use: direct costs, operational costs and investment in infrastructures; indirect costs, such as legal, administrative and corporate social responsibility; and costs associated with risks, which may include the financial consequences of a lack of water, floods or even risks to reputation.

Telex

The metropolitan district of Marseille has renewed Veolia's contract — €2.2 billion — for the distribution and purification of Marseille's water for the next fifteen years. This is the second largest market in France.

The hotel group Yunnan Huachuan and Veolia have signed an energy services contract for the air-conditioning system in the five-star Dynasty hotel in Chongqing's Yubei, district (China).
The contract, worth 140 million RMB (approximately €17 M) over 20 years, involves the design, construction, installation and management of the system.

Synergy

Total trust from Neapco

An atmosphere of complete trust marked the renewal of the partnership between Neapco — a major player in the production of automotive spare parts — and Veolia's subsidiary Globalis for a further five years. Their previous agreement involved the management of a wide range of services ensuring the smooth running of the Düren plant in Germany, one of their most important units in the world.
The new contract, which represents a cumulative turnover of €30 M over the period, provides a comprehensive service offering: process water and wastewater management, a host of maintenance and waste management services, and energy provision.

Reservoirs

Half a million cubic meters of freshwater discovered

According to a team of scientists from Flinders University in Australia, the continental shelf is said to contain almost half a million km³ of freshwater off the coast.
These completely trapped groundwater reserves are no longer being replenished but contain enough water to supply coastal cities for thousands of years.

Energy

China is waking up to coal seam gas

China has set itself a new environmental target: reducing coal's contribution to total energy production from 67% (in 2012) to 65% in 2017.
This explains the green light from the authorities for the construction of nine large synthetic natural gas plants. Once they are operational, they are set to generate over 37 billion m³ of gas per year. But also, according to estimates, 21 billion metric tons of CO_2 emissions and intensive water consumption (6 to 12 liters per cubic meter of gas produced).
This is only the beginning: private Chinese companies are planning to build 30 further plants, which will produce some 200 million m³ of gas per year.

MUNICIPAL WASTE TREATMENT IN EURO 28

Between 1995 and 2012, major efforts were undertaken by municipalities to reach the targets set by the 1998 European directive regarding waste management.

Municipal waste

LESS WASTE BURIED

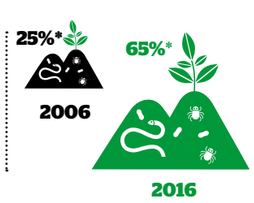
Despite the increase in the **volume of municipal waste** (households + businesses) between 1995 and 2012, the amount of landfilled waste has been reduced, falling by 34% over the period from 296 kg per capita to 167 kg per capita. In other words, a 4.4% annual drop since 2002.
As a result, in 1995, 68% of municipal waste was landfilled, compared to 38% in 2012, i.e. more than a third has been diverted from landfills in 13 years.

*Landfilled waste, weight per capita.

CONVERTING ORGANIC WASTE

COMPOSTING

Since 1995, the waste composting proportion has been increasing at a rate of 9.1% per year. In 2012, 15% of municipal **organic waste** was composted. This development in organic waste conversion is largely due to the European directive of April 26, 1999, which states that biodegradable municipal waste sent to landfill must be reduced by 25% by 2006, by 50% by 2009 and by 65% by 2016.



*Composted waste percentage of the total weight of organic waste collected

RECYCLING RATE

In 2012, four countries recycled at least half of their municipal waste: Germany (65%), Austria (62%), Belgium (57%) and the Netherlands (50%).

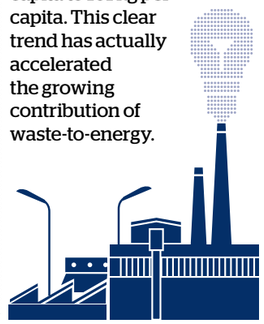
COMBINED RECYCLING/ COMPOSTING RESULTS

Representing 42% of the volume of waste treated in 2012, the recycling/composting proportion is overtaking the landfill proportion, which has been in decline since 2008 (38%).

*Recycling/composting proportion in municipal waste management

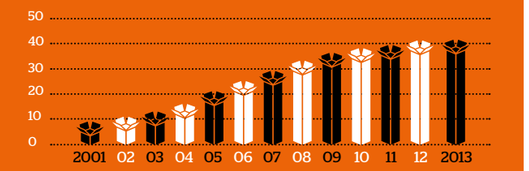
WASTE INCINERATION

Since 1995, the volume of waste for incineration has increased by 19.6 Mt, rising from 65 kg per capita to 101 kg per capita. This clear trend has actually accelerated the growing contribution of waste-to-energy.



RECYCLING: THE CASE OF ENGLAND

The rate of recycled household waste reached 43.2% in England in 2012/13, compared to 11% in 2000/01. While this rate remains below the 50% target set by the European Union for 2020, the efforts made by the country in the space of ten years suggest that it could reach the target over the next six years.



Source: Eurostat, the statistical office of the European Union. http://epp.eurostat.ec.europa.eu/portal/page/portal/waste/introduction/

Are we ready for the circular economy?

E. MacArthur / A. Frérot, the great debate.

What is your definition of the circular economy?

Ellen MacArthur
Founder of the
Ellen McArthur Foundation

"It's an industrial system in which materials – both technical and biological – are in continuous flow. Metals and polymers are part of continuous loops and reused, with a high level of quality, while organic elements return to the ground in complete safety and contribute to natural resources."

Antoine Frérot
Chairman and CEO of Veolia

"It's an economy in which one person's waste automatically becomes another's resources. An economy of recovery and reuse, recycling and re-creation. A more efficient economy with a greater social impact and a lesser environmental impact. In short, an economy that serves humans without harming the environment!"

Why is the circular economy so important for you or your company?

Ellen MacArthur / When I was sailing the oceans, it was essential for my survival to manage my resources as efficiently as possible. It's the same on dry land: we are totally dependent on the finite resources we have available to us globally. This is why I wanted to focus my foundation's work on a different way of looking at how we use resources. We highlight the economic rationale for a move to a circular economy, different from our current linear "take - make – dispose" model, which allows resources to be in a continuous flow thus maintaining products components and materials at their highest value, and building the systems to allow the regeneration of natural assets..

Antoine Frérot / Over the next twenty years, the middle classes will grow from one to three billion people. This will cause unprecedented pressure on natural resources. This phenomenon requires innovations and a new way of thinking, working and consuming. We are being forced to call traditional concepts into question. We can and we should see this break with the past as an opportunity. It is a new direction that all industrialists and local authorities are going to have to take, and this won't be limited to recycling or reusing waste. Veolia is ready and waiting to help its clients meet this challenge.

Doesn't the circular economy require a revolution? And is the economy as we know it today ready to change?

E. MA. / A circular economy is a move towards building material flows, both natural and industrial globally through rethinking our economic system, and the way resources are currently used. In this system, products are designed to be remanufactured, almost endlessly, for new uses, and if they become obsolete they have been designed for disassembly. The materials can therefore be recovered and made into the products of tomorrow. There is no doubt that, in the long term, the economy must change towards this as, our current 'linear' system is not viable.
I am optimistic when I see more and more companies, students or governments becoming aware of the opportunity of this move. They understand that the circular economy can become an incredible driver for growth and prosperity. This is demonstrated by the "Towards the circular economy" report that we produced with analysis by McKinsey. Its conservative estimate is that the transition to a circular economy could generate over one thousand billion US dollars (or commonly used 1 trillion USD) in revenue in the form of material savings.

"On the oceans and on land, we must realize the planet's limits."
Ellen MacArthur

"The circular economy is a more collaborative economy, which increases the interfaces between sectors of activity and therefore breaks down the old technical, organizational and social barriers."
Antoine Frérot

What is Veolia doing in concrete terms to create loops for recycling resources?

A. F./ As a global leader, we offer our clients approaches that loop material, water or energy cycles. In this respect, we have a responsibility, which we are assuming as our clients are asking us to assist them in this area. Information and education are essential if citizens are to embrace the circular economy's policies. The challenge is to get them involved so that they play an active role in their consumption and environmental protection. A concrete example? In Brussels, we have developed a procedure using the sludge from wastewater treatment plants – for producing – bioplastics that meet plastic manufacturers' quality standards. You should bear in mind that in Europe, out of the 25 million metric tons of plastics produced each year, only a quarter are recycled. This is why our company is inventing technologies to recycle more. From the used plastics contained in waste electrical and electronic equipment, we manage to manufacture high-quality polymers with a 99% purity rate and at a lower cost than virgin material!

What are the main factors that could encourage companies to adopt the circular economy model? And the main obstacles?

E. MA. / In the first place, the incentive for companies to create more value from the resources that they use is driven by the increasingly volatile prices of raw materials, and the fact that we have seen a century of their price declines erased in a decade. Being better protected against this fluctuation phenomenon will increase their value, including for the shareholder. Another element in favor of the circular economy concerns products. In particular, by incorporating more services into them, they will be more reliable for the consumer and have higher added value, and therefore ultimately be available at a better price.
Our "Towards the circular economy" reports show that we have a win-win situation for both the producer, who will improve their margins, and the consumer, who will have a better service/product.
To bring about this change, the biggest barriers lie in product availability, and in the existence of a •••

The circular economy in figures

According to the McKinsey report for the MacArthur Foundation:

50% of the input costs for cellphones could be saved by manufacturing devices from recovered parts.

The United Kingdom could save up to **$1.1 billion** per year by eliminating food waste. This would reduce its annual greenhouse gas emissions by **7.4 million metric tons.**

The European Union's manufacturing sector could make net savings in material costs worth **$630 billion** by the year 2025.

••• pertinent method for most accurately calculating the benefits and the services engendered by the use of these "new" products, and the growth – or otherwise – of the reverse logistics sector, which is the key element in keeping product flows moving.

Do you think that a functional service economy, based on selling services rather than products, can one day be companies' core activity?

A. F. / Yes, absolutely. Besides, we are seeing the emergence of sustainable economic models in this area. On the fax machine market, function has already gained the upper hand over ownership. Car sharing is expanding, and our company has put in place schemes of this kind for its employees. Paradoxically, the challenges of the 21st century are leading modern man to rediscover the ancient wisdom of Aristotle: "wealth consists more in use than in possession."

E. MA. / What is known as "planned obsolescence" is a direct consequence of the linear production model based on volume, in which the more you sell, the more you generate profits. Under these conditions, it's not surprising that there is no real incentive for manufacturers to put different goods on the market. In a performance model including service and no longer merely the sale of products, the rules of the game change radically. The manufacturer retains ownership of the products. The latter therefore become equipment banks and it is in the interest of manufacturers to put high quality, reliable, and ultimately disassemblable goods onto the market, for which the question of price is no longer predominant.

To transition from a linear to a circular economy, heavy investments need to be made, especially in R&D. How do we go about it?

E. MA. / It is, of course, important that the required investments in R&D and the implementation of reverse logistics are up to par. But our report clearly shows that the initial economic benefits of promoting a circular economy can be achieved with minimal investment and minor changes in design. Opportunities are now available for the taking with a change in paradigm. This is, incidentally, what lots of companies are doing and they are thus reaping the advantages afforded to pioneers..

A. F. / We are able to make major progress thanks to partnerships with leading research centers. For example, with the French Alternative Energies and

Atomic Energy Commission, we have invented a process for recycling used batteries and obtaining lithium that can be directly used by industrialists. This was a decisive discovery: in fact, this rare and expensive metal is essential for electric car batteries, and thus for a more sustainable world. If tomorrow, one tenth of all cars were electric and each battery contained 10 kg of lithium, their recycling would become strategic! We would like to stay innovative, not alone, but in partnership with universities and laboratories, or with our clients. n

The MainStream project, a transition catalyst

> The MainStream project, to which Veolia contributes, is a collaboration between the Ellen MacArthur Foundation, the World Economic Forum and the firm McKinsey. Its objective is to help promote circularity through supply chains and by encouraging cooperation between economic players. For example, in the field of plastics, a few key players have agreed to simplify the process of certain material flows, enabling high-quality recycling. The project aims to encourage business leaders and experts to get together to activate certain catalysts that can help to accelerate the transition. Such as, for example, separating added value creation from the consumption of energy and resources. This may be done particularly through considered design and sustainably managing raw materials or by remanufacturing methods, which create jobs that cannot be relocated. According to a recent estimate, the European Union could reduce its raw material needs by 17 to 24% in this way, while boosting its GNP and creating between 1.4 and 2.8 million jobs.

Organizing delivery of drinking water in Bangladesh. Encouraging R&D innovation in France. Implementing a new SAP management tool in Australia.

Above and beyond

Meeting Veolia Employees from all over the world.

Ajoy Chakraborty
Project Director,
Grameen-Veolia,
Dhaka, Bangladesh

To ensure the completely safe and hygienic distribution of water in rural area of Goalmari and in the capital Dhaka, Ajoy Chakraborty and his team have had two simple yet efficient ideas: using 20-liter containers to bring the services as close to homes and offices as possible; and paying some 43 women to supply the 44 water points required for this socially responsible network.

Drinking water quality is a serious public health problem in Bangladesh, which exposes over 30 million people to sometimes fatal consequences. The country possesses relatively shallow groundwater tables, thereby offering easy access to water but they are unfortunately – for geological reasons – often contaminated with heavy metals such as arsenic.

In light of longstanding habits, by which the local population draws water for free wherever it is found, in other words from polluted pools, Ajoy had the idea of setting up a suitable delivery network for rural water supply.

Boasting twenty years' experience in the water sector, he managed to convince the Veolia managers to fully leverage the plant infrastructure in order to deliver 20 liters containers to the urban residents located 50 kilometers away along with traditional supply systems. "The 43 or so women in rural water supply enlisted to distribute them receive a set commission instead of fixed wage and specific bonuses according to precise targets," explains Ajoy, "and this framework creates a profitable dynamic for everyone."

Ajoy adds a reminder that Grameen-Veolia is "not an NGO nor a business, but embodies a new social enterprise model. Our team is small, multidisciplinary and multicultural. We work with a scientific committee made up of eminent international experts from civil society — sociologists, economists, researchers, industrialists, etc. — and charitable organizations such as Unicef, the World Bank, etc. All of the profits are automatically reinvested to expand the sale of drinking water at a set price according to the populations' limited resources."

Hot on the heels of the first challenge of delivering this packaged water every day comes another that is more mental than physical: changing attitudes. "Delivering is good, changing habits is better," notes Ajoy. For this considerate man committed to the success of his socially responsible enterprise, "access to safe drinking water is priceless!" n

Gael Webster

Operations Administration Supervisor,
Tasmania, Australia

"When you love your job, you do it well and it shows." This conviction is undoubtedly what drives Gael on a daily basis and the message she has been able to pass on to her team to successfully develop – in under two years – reliable, effective and high-performance SAP management tools.

Adapt and implement a new operational and administrative management SAP system continent-wide. This was the challenge taken up by Gael to optimize the performance of Veolia's equipment, services and activities in Australia. All with a major constraint: working according to a chain reaction process, in which each state takes its inspiration from the lessons learned by the previous one in starting up its own adaptation.
After an initial rollout in Tasmania, Gael then steered the system's deployment in the five other Australian states, particularly Victoria and New South Wales.
To meet the deadlines in such complex and major overhauls of this nature, Gael literally devoted herself to the task for months. Meetings, trips, managing her team... Personal dedication that springs as much from a passion for her job as a desire "to live up to the trust and unfailing support of my supervisors."
Fortunately, her solid knowledge of customer needs, keen sense of organization and ability to conceptualize best practices and bring talents together helped her to overcome quite a few pitfalls: "We had to convince people of the benefits of the SAP tools, whether in terms of optimizing costs or operational performance. To facilitate their integration, we had to completely change all of the work methodologies in place. With my team, we helped – I hope – to make this transition easier," she concludes. Good results on the ground were not long in coming.
However, what she didn't see coming was the award for Best Employee of the Year 2012! n

Malik Djafer

Manager in the Technical & Performance Unit,
Saint-Maurice, France

Malik Djafer has a passion for innovation. His key skill is the ability to form teams to optimize sludge recycling and convert it into biogas.

Malik Djafer's enthusiasm is contagious. He doesn't need a team-building seminar to maintain unity between the fifteen specialists who make up his department. "There's no competition because everyone has a clearly defined area of expertise and many years' experience. These complementary skills allow us to cover the entire cycle for a water treatment channel."
Under the direction of Malik, who was responsible for the innovative Athos sludge treatment method, the engineers and technicians share two must-have qualities for R&D: flexibility — "so that you don't find yourself at a dead end because you are stubbornly set on one avenue of research" — and the ability to discuss in English the new methods developed. "Because innovation is about knowing and making known."
What did he take from his five years' experience in Hong Kong in Veolia's technical operation? "Anglo-Saxon management methods that give pride of place to pragmatism, concision and efficiency. And the realization that 12,000 km from the group's headquarters, people are counting more than ever on the technical support of the R&D support teams. I try to pass on this idea of service to my colleagues." n

Soh-ar

a new water partnership

Faced with the challenge of providing its industrial clients with top-level services, Majis Industrial Services, the Sultanate of Oman's leader of industrial water services, has signed a "strategic alliance partnership" with Veolia's Middle East subsidiary. In the port of Sohar, the two partners run and maintain water extraction, treatment and distribution facilities, while laying the foundations for socially responsible and environmentally friendly management.

Issues at stake

> To meet the water needs of industries in the port of Sohar, the Sultanate of Oman has created a state-owned corporation and undertaken the construction of major infrastructures for water catchment, treatment and distribution.

> The rapid development of the port's activities and their impact on the national economy, along with growing sustainable development concerns, led to the search for support from a leader in environmental services.

Objectives

> Gain the necessary skills for sustainably managing water services in the port area.

> Train staff in learning the best operating procedures while encouraging local employment.

> Develop expertise in providing water solutions for the country's industries.

Veolia solution

> A contract concerning the maintenance and operation of infrastructures, accompanied by "strategic management assistance."

> Support for the teams, focused on training and sharing best practices in water management.

> A corporate social responsibility program incorporating awareness-raising, university partnerships and educational programs.

It goes without saying that a port holds a "strategic" position. Yet, when it comes to Sohar, this observation is more than apt, as the location and role of the port area are so closely linked to the country's future.
Keen to reduce its reliance on oil, the Sultanate of Oman has actually been focusing on diversifying its economy for almost twenty years. An ambition in which the port of Sohar is playing an active role: today, this hub of shipping trade in the Middle East, the sultanate's largest industrial area, plays home to the petrochemical industry, along with metallurgy, electricity production and logistics industry.
In order to meet these industries' major water needs, a state-owned corporation was founded in 2006: Majis Industrial Services Company (MISC).

Finding inspiration

As the service provider to a major industrial site for Oman's economy, it was down to Majis to encourage sustainable development best practices. Given its clients' areas of activity, the brand new company set about developing services with high added value in terms of the environment.
To treat and distribute the water required for the port's activities, it developed dedicated infrastructures: a seawater extraction and treatment facility, which is the largest in the country (334,000 m^3/hr.), a pumping and electro chlorination system, a potable and process water network along with a network for collecting and treating domestic and industrial effluents throughout the port area, some of which are treated up to irrigation standards.
The purpose of these facilities is all the more important because it includes preserving the drinking water resources, used by the port's occupants for their industrial activities or landscaping.
In order to meet the demands of this rapidly developing port area and increase the quality of its services, the Omani company decided to rely on external expertise. "We were looking for a model of inspiration and the partnership seemed to be the best way of gaining knowledge," comments Rhama Al-Mashrafi, the company's CEO. Veolia's Middle East subsidiary, was chosen following an international tender call to support Majis in its growth.

Andrea Lanuzza

Operations Director,
Veolia

"Veolia partners Majis, but also provides services to other port industries sharing the know-how and experience of all the Veolia's business units present in the region. Here we have identified major opportunities for growth in the Sohar region in line with the Veolia group's development aims in the industrial sector. Competition is strong in the port, but our expertise and commitment make the difference. We recently delivered in partnership with Seureca a hydraulic study for the assessment of the fire fighting system of three major refineries including performance measurements and suggestions for improving the system and its operation in the event of an incident. This is just one illustration of the services that we are planning to develop for other industries in the rest of the country."

Improving water management

Signed in 2010 in the form of a "strategic alliance partnership", the contract is based on two commitments, highlights Andrea Lanuzza, Veolia's Operations director: "We are involved in operating and maintaining the existing infrastructures, while Majis benefits from the expertise that we offer to create tailor-made solutions to its clients' needs and acquire the necessary experience and know-how to strengthen and develop their skills."
Assistance with diagnosis, engineering, treatment technologies... Veolia does not merely offer the implementation of best practices; it is also committed to supporting the local teams through training (87 hours per employee in 2013) and a growing involvement in the •••

Community-minded

Corporate social responsibility can also be learned: within the framework of the partnership with Majis, a major program has been formalized for the years to come. Structured around three objectives, it firstly aims to strengthen ties with the local communities through university partnerships and educational programs, accompanied by awareness-raising actions. This was demonstrated by Majis' participation in "Omani Women's Day", which offered an opportunity to inform the port's employees about breast cancer screening and treatment. The program also encourages skills development. Veolia welcomed young engineers from Omani universities to train them in water engineering best practices. Finally, part of this program is devoted to sharing sustainable development knowledge (the environment and biodiversity) with Majis' subcontractors, suppliers and partners.

Hamood Al Manji

Human Resources
and Administration Manager,
Majis

"To provide our clients with the most high-performance water services, we needed to build solid foundations, by using the best operational and management procedures, as well as training reliable personnel.
We are all the more keen in this respect as the Sohar region represents a major employment pool. A young company like ours therefore had a lot to learn from a leader in environmental services.
With this alliance, we seized the twofold opportunity of gaining in service quality and know-how, based on a skills transfer to the benefit of Omanis."

To optimize its production of ammonia and international-class granular urea (+ 1.3 Mt/year), SIUCI – Sohar International Urea & Chemical Industries SAOC – relies on the expertise of Majis: extraction of seawater, supplying of drinking water, sewage treatment, etc.

Key data

Beginning of the contract:
December 2010
Length: 6 years
Current number of Majis clients: 27
Seawater catchment capacities:
334,000 m^3/hr,
almost 600,000 m^3/hr by 2015
Process water production:
8,000 m^3/day
Drinking water production:
12,000 m^3/day
The port's industrial portfolio:
Vale (Brazil); Air Liquide (France); Sohar Steel (Oman); Sohar Aluminium (Rio Tinto Alcan, Oman); Larsen and Toubro, Jindal Power & Steel (India); Inco (Turkey)

The keys to "Omanization"

The current job nationalization policy, known as "Omanization," reflects the sultanate's desire to open up employment to Omanis. While raising the level of qualifications, this national challenge sets major recruitment targets for companies. As a guide: by 2020, the deadline set by the "Vision for Oman's economy" program launched in 1995, the rate of Omanis employed in the public sector must reach 95%, while the goal for the private sector is 75%* (compared to 52% for Veolia in 2013). Majis has set a target of 80% of its workforce.

* According to a study by the CERI (Center for International Studies and Research), entitled *"Le sultanat d'Oman en quête d'un second souffle"* (Oman seeks a second wind) – Marc Valeri.

•••

operational and managerial activities. "The aim being," adds Andrea Lanuzza, "to gradually transfer responsibility to our partner before the activities are internalized at the end of 2016." While this places the emphasis on human resources management, it is also a way of better meeting the targets set by the "Omanization" policy (see boxed text). In addition, the contract comprises a significant environmental dimension, including QHSE certifications, impact studies, the introduction of emergency response plans and targets for reducing the carbon footprint (a 17% reduction in energy consumption for effluent treatment and a 7% reduction for seawater extraction).
"Through this partnership and the expertise that it helps to bring us, we are also keen to diversify our business portfolio," says Rhama Al-Mashrafi, Majis' CEO. The results were soon visible: in 2012, Majis signed an agreement to become the exclusive supplier of water services for the free zone of the port of Sohar (distribution of drinking and process water, wastewater collection and treatment). Today Majis has finalized the construction of a new reverse osmosis seawater desalination plant and is building a new seawater intake to double its seawater extraction capacities. Everything would indicate that the Sohar region seems well placed to embody the reality of Oman's economic revival. n

Pé-cs

A city goes 100% biomass

Initially powered by coal and then gas, the city of Pécs Hungary (170,000 inhabitants) is now powered by two combined heat and power units running solely on straw and wood.

Creating energy resources

that are local and renewable is one of the aims that the city of Pécs, which is the fifth largest in Hungary, can congratulate itself on having achieved. With the commissioning of a new combined heat and power unit in November 2013, a total of 240,000 metric tons of straw sourced from some twenty farmers from the southwest of the country will power the city's heating network.

100% renewable resources

Pécs is now becoming one of the few cities in Europe using 100% renewable resources for its heating. Operated by Dalkia Hungary, the 35-MWe production unit using straw supplements another 50-MW production unit, which has been running on wood since 2004. "It is extremely rare, if not unique, to have these two types of resources on the same site," states Renaud Capris, country manager of Dalkia Hungary. "For the Hungarian population and its elected officials, it is very reassuring to be able to rely on energy resources that significantly reduce their energy dependence and make it possible to create a considerable number of jobs that cannot be relocated." In fact, the Pécs production unit represents •••

With the opening of the Pécs biomass plant in November 2013, the city is now heated using straw.

Issues at stake

> Decrease Hungary's energy dependence by reducing gas imports by 80 million m^3 a year.
> Allow Hungary to fulfill its commitments in terms of climate change: thanks to this installation, almost 150,000 metric tons of CO_2 per year will be avoided.

Objectives

> Build a 35-MW power plant unit, based on the conversion of biomass from farming.
> Rely on technology transfer: the furnace, which is unique in Hungary and allows herbaceous biomass to be burnt, is equipped with four chimney flues and a vibrating grid. Adapting the equipment to the specific local features required a host of technical developments and innovations in situ.
Thanks to these innovations, the efficiency, power and operational flexibility of the furnace have been improved and the usable fuel portfolio expanded.

Veolia solution

> Pécs has the first combined heat and power unit in the European Union producing heat and electricity from straw.
> Pécs is the first major city in Hungary with a heating network entirely based on the use of renewable energies.
> Biomass CHP generation using straw generates 70 MW of heat, produces 35 MW of electricity and covers 60% of heating needs.
> Veolia supports the local farming sector, by buying 240,000 metric tons of straw from it per year.

An €80 M investment

Now 100% "green" powered, the Pécs plant serves over 31,000 housing equivalents and just under 450 public buildings. Thanks to considerable investment – €80 M to switch from gas to straw, the plant will have a storage hall that can hold up to 2,000 metric tons of raw material, in order to convert the 240,000 metric tons of straw.
The boiler is powered by four automatic lines: the straw bales arrive via a conveyor belt before being shredded and injected into the boiler. This new production unit allows Hungary to save 80 million cubic meters of imported gas and prevent the release of 150,000 metric tons of CO_2 into the atmosphere.

the equivalent of 210 million cubic meters of gas per year, which is far from trifling in a potentially turbulent geopolitical climate, with possible tensions regarding Russian gas.

Creating new jobs

From an environmental point of view, using straw and wood – primarily waste from forest management or processing industries – makes it possible to prevent over 400,000 metric tons of CO_2 emissions per year. "I'm delighted that this project allows Hungary to improve its performance in terms of energy efficiency," states Zsolt Páva, the mayor of Pécs, for whom Dalkia's long-term commitment contributes to the use of renewable raw materials while creating numerous jobs.
In order to transport all of the necessary straw to the factory, over 170 jobs have been created locally to manage the plant's entire procurement channel.

The same applies to the wood channel, which has generated over one hundred jobs all along the supply chain. "What's important for us as operators," declares Renaud Capris, "is to be able to ensure a reliable and regular supply of the raw material. This is why we have established long-term contracts with farmers as well as the forest or sawmill operations. Straw is a plentiful resource, but it is extremely important to be able to have appropriate storage conditions with optimal humidity levels to maintain high combustion efficiency." Through these long-term contracts encouraging close collaboration with Dalkia, farmers are able to invest in machines that produce standard 400-kg bales meeting the specifications' requirements. The wood is procured in a 100-kilometer radius around the plant in the form of waste from wood chips or processing plants. More than enough to keep you warm during the cold Hungarian winters! n

The shipping of the straw toward the plant has led to the creation of more than 170 local jobs to ensure the plant's supply chains.

Port Arthur & Ellesmere Port

Syria's chemical weapons: When duty calls

Managing the hazardous materials involved in destroying Syria's chemical weapons requires special expertise possessed by few companies. To carry out this important international peace initiative, international authorities turned to two Veolia facilities in the US and the UK.

In August 2013 people around the world recoiled at gruesome images of Syrian civilians – many of them children – who appeared to have been victims of the use of chemical weapons. Although their use had been banned following World War I, chemical weapons have continued to be produced and stockpiled by a number of countries, despite international efforts at eradication.

Evidence of their use in Syria provoked international shock and condemnation. Following confirmation through a UN investigation that chemical munitions had been used, diplomatic efforts culminated in an agreement by the government of Syria to destroy its declared 1,300-ton stockpile of chemical weapons under an accelerated program by mid-2014.

Program oversight is the responsibility of The Hague-based Organization for the Prohibition of Chemical Weapons (OPCW), which polices compliance with the chemical weapons ban. Destruction of the more toxic chemicals stockpiled in Syria's arsenal will be carried out

Mitch Osborne

Gulf Coast Hazardous & Regulated Waste General Manager, Veolia North America

"As people learn the facts about what we've been asked to do, they recognize that the plant is playing a key role in an important humanitarian mission."

David Lusher

Executive Director, Veolia UK

"This international effort to destroy a chemical weapons stockpile that poses a risk to human populations is a difficult campaign that requires acts of leadership. In performing our role, Veolia is affirming its position as a global leader in hazardous waste management."

Issues at stake

> Following an international tender launched by the Organization for the Prohibition of Chemical Weapons (OPCW), Veolia and the Finnish company Ekokem were chosen from among fourteen companies to provide "the transport, treatment and destruction of hazardous and non-hazardous chemicals from Syria." The estimated cost of this destruction by private companies is between €25 and 30 M.

Objectives

> According to the schedule set by the international community, the entire stockpile of chemicals must be transferred to the different incineration sites chosen by the deadline of June 30, 2014.

> Veolia in the United Kingdom is responsible for the destruction of 150 metric tons of "B precursors", while Veolia in the United States and Ekokem are sharing 500 metric tons of "B precursors."

Veolia solution

> In the UK, the process will take place at the Ellesmere Port incinerator in Cheshire. It falls within the framework of an existing hazardous waste destruction contract, under the supervision of the Disposal Services Authority (waste management authority) belonging to the British Ministry of Defense.

> In the US, the process will take place at the Port Arthur incinerator in Texas. It falls within the framework of the authorization granted every year by the Texas Commission on Environmental Quality, which allows six categories of RCRA hazardous waste (ignitable, toxic, corrosive, hazardous, EP toxic and reactive) and most PCBs to be treated.

aboard a specially outfitted U.S. ship. The remaining materials are being transported to commercial chemical processing plants for incineration, including two Veolia facilities: Ellesmere Port in the UK, and Port Arthur in the US.

Two facilities, two paths

The two facilities became involved in the high-profile, international program to destroy Syria's chemical weapons through different routes.
In the UK, the Ellesmere Port incinerator will destroy a portion of the chemicals at the request of the government as part of its hazardous waste treatment contract with the British Ministry of Defense.
The UK, one of several nations assisting the OPCW with the transportation and destruction of the chemical materials, took responsibility for 150 metric tons of "B precursors." The materials are standard industrial chemicals routinely used in the pharmaceutical industry.
In order to be made into chemical weapons, they must be mixed with other chemicals (known as "A precursors").
The Ellesmere Port facility has experience in managing similar chemicals says Veolia's UK Executive Director David Lusher. "We are well-acquainted with OPCW procedures, having had inspectors at our plant several times over the past 10 years to verify the destruction of 'protocol' materials. In our case, we receive a chemical from an industrial customer that is a by-product from the manufacture of an everyday domestic utensil; in the wrong hands, however, it could potentially be turned into chemical weapons, which is why OPCW monitors its destruction."
Meanwhile, in the US, the Port Arthur, Texas, facility was selected by the OPCW in February, along with a Finnish company, from a list of 14 bidders to help incinerate 500 metric tons of industrial chemicals following a rigorous tendering process. In addition to the Veolia plant's treatment technology, strong safety and environmental record, and logistics capabilities, two other factors in its selection were its past experience and its relations with the community.
"Our team and our plant have significant experience with high-level, high-profile projects and a demonstrated ability to incinerate hazardous materials in a way that is protective of employees and the community," says Gulf Coast Hazardous & Regulated Waste General Manager Mitch Osborne. "We have worked extensively with the U.S. Army on destroying chemical weapons stocks and knew what to expect when it came to OPCW's rigorous inspection processes."

One goal: irreversible destruction

In addition to their government clients, both facilities are permitted to manage hazardous wastes received from industrial customers, including petrochemical plants, pharmaceutical companies, manufacturers and universities. Under the OPCW project, neither plant will handle actual chemical weapons, whose importation is in any event prohibited by national and international laws. Rather, they will receive a portion of the unused industrial chemicals that had been earmarked for use in Syria's chemical weapons program. Under the thermal destruction method chosen for these materials by OPCW, the chemicals are incinerated at high temperature, breaking them down into gaseous components. The materials received by the plants will be bar-coded and stored before being fed into the incinerators, converted into gases and then scrubbed for acidic, particulate matter and heavy metals. The entire incineration process is subject to strict and continuous emissions monitoring and to OPCW inspection to ensure that the chemicals are irreversibly destroyed and that the processes are safe and environmentally sound.

Community outreach

A key issue for both plants has been ensuring that their local communities understood the nature of the work that Veolia was proposing to undertake.
"We are very sensitive to the potential concerns our neighbors, elected officials, and regulators might have about bringing these materials into our facility for treatment," says Mitch Osborne.
"Even though there is no difference in the composition of these chemicals and the industrial chemicals that we handle safely every day at our facility, we recognized that there were bound to be questions about these materials arriving by boat from the midst of a war zone."
As part of its communications outreach, the plant has emphasized more familiar uses of the five chemicals it will be receiving. The phosphorus compounds are used in petrochemicals, semiconductors, plastics, fertilizers, herbicides and pesticides. The hydrochloric acid is "the same chemical you would use to clean your driveway or put in your swimming pool," he explains. "It's only when they are misused that they can be converted into chemical weapons."
Likewise, Ellesmere Port emphasizes an open door, transparent approach with local stakeholders. "We have spent a great deal of time making sure that community residents, elected officials, the media and anyone that may have concerns have all of the information about our experience, safety record and the procedures we have in place to manage these materials," says David Lusher.
At both facilities, the humanitarian nature of the role they are playing in the destruction of the chemical weapons is a source of pride among Veolia team members – and, increasingly, within the host communities. n

Key figures Port Arthur

At Port Arthur facility, a **245**-member team treats approximately **150,000** tons per year of RCRA and TSCA waste (Toxic Substances Control Act) and auxiliary fuel. Permitted and monitored by the State of Texas, the facility is one of just 3 U.S facilities permitted to manage PCBs.

Key figures Ellesmere Port

The facility's **73**-member team treats approximately **100,000** metric tons of hazardous materials annually.
This site has **22 years** of operation at the highest standards.
The process should not produce any toxic chemical emissions, but it does have an environmental impact.

“I’m open to chance, I go by instinct and let the moment take over” Steeve luncker

Yakutsk, between ice and fog

Steeve luncker began his “extreme city” world tour in a city in central Siberia, the coldest on the planet. From the most populated city to the most violent, from the highest to the lowest, he explores urban superlatives to question mankind’s relationship to cities – those urban environments where 70% of the world’s population will be living in 20 years’ time. After setting off in January 2013 for the capital of Yakoutia, without a guide or any understanding of the language, not to mention the customs, the Swiss photographer ventured into this fairytale landscape, frozen by temperatures ranging between –40° and –50°C. For eight months of the year, the literally biting cold plunges Yakutsk’s 270,000 residents into a permanent fog. From this place where everyday life is surreal by nature, Steeve luncker manages to create images that are incredibly real, with his natural search for the detail in everyday situations.

Public transport So as not to end up frozen, you have to do things quickly and effectively. For example, find out the bus times in advance so that you don’t have to wait. Because even at -40°, the city doesn’t come to a standstill. Everything works, especially the transport system. Public transport is the only place where there is a concentration of people. “Finally, I’m up close to people, I discover their faces.”

White death Cars run on special fuel that doesn't freeze and they are often wrapped up in insulating material around the passenger compartment, as well as the hood to prevent the engine from cooling down. The engine is left running all the time, except when the car is parked in a heated garage. "A car that stops without the shelter of a heated garage dies frozen."

Days of fog In Victory Square commemorating the Great Patriotic War of 1941-1945, Lenin's statue has faded away. The city is engulfed in a thick, almost permanent fog, out of which emerge dark and heavy figures sped onwards by a cold that penetrates and chills to the bone. It's hard to imagine that some 300,000 people live here! "Going shopping in temperatures only experienced by Everest mountain climbers and polar explorers is a challenge."

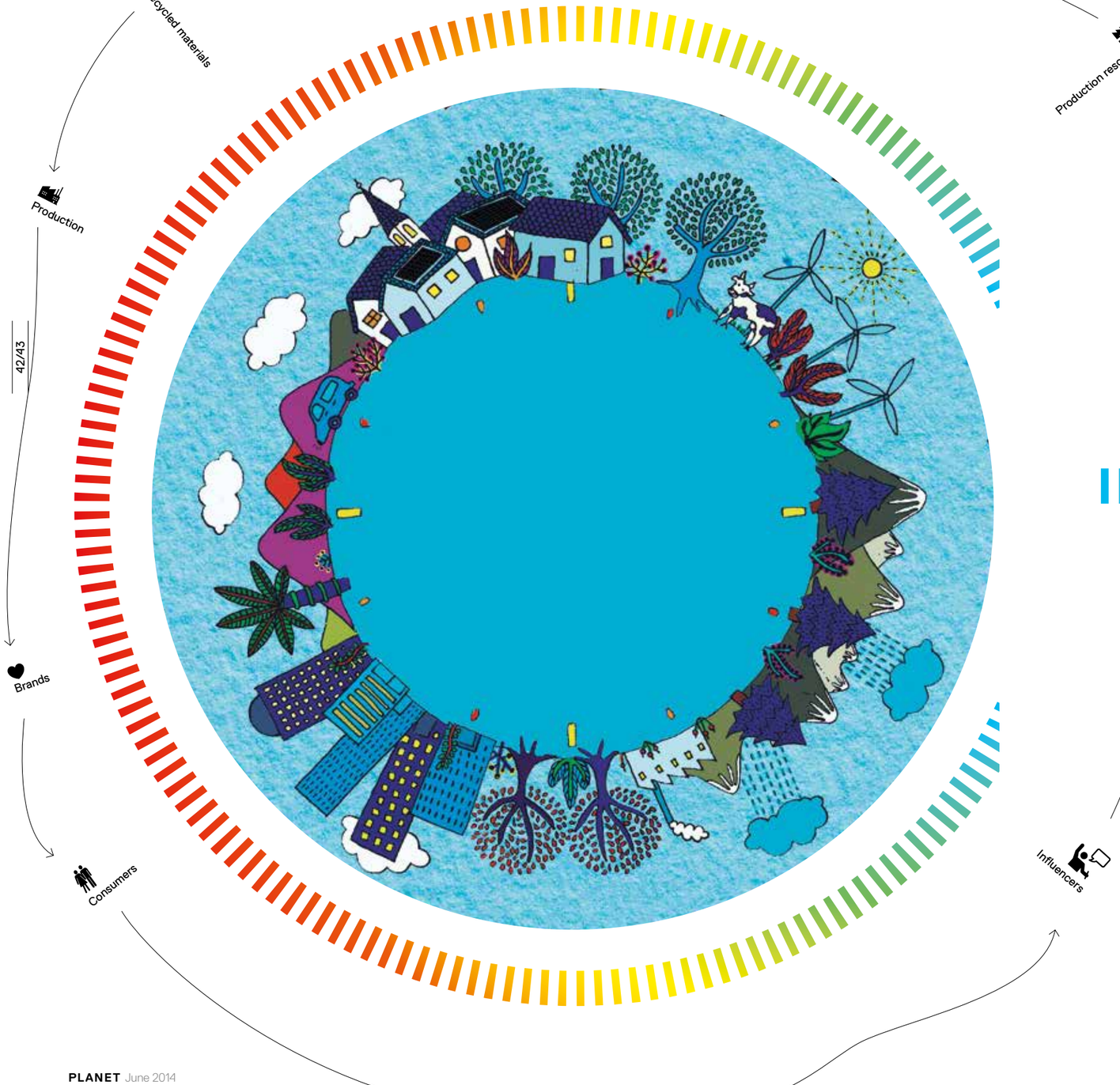
The big wheel "It is reduced to silence by this cold that takes away any desire to have fun." Below –35°C, children can no longer go out and are excused from school. In reality, everything is designed to work in the cold, without human intervention or difficult repairs. For example, pipes and electric wires are not buried to prevent having to unearth them through the formidable permafrost, ground that is permanently frozen.

Steeve luncker: a man in the city

After icy Yakutsk and overpopulated Tokyo, Steeve luncker will fly off to Iran in a few months, heading for the overpolluted city of Ahvaz. At the rate of one or two cities every year, adding up to a dozen in total, he sees this journey as a break from his job as a photojournalist. Moonlighting as a world traveler, he shoots these city projects using film. Inspired by the "extremes" that he is exploring, he poses the question: what does urbanized society look like in these constrained environments? How do people adapt to them? Is it so different? Steeve luncker avoids sensationalism, turning his back on the predictable, revealing an unaffected picture of everyday life. "In Tokyo, a terrifyingly dense city, my attention was caught more by the effects of overcrowding on behavior: solitude and being locked into work, play, sleep or technology," he explains. His unusual and personal approach takes the form of raw immersion, without preparation or staging, which leads him to feel rather than reproduce the realities with which he is confronted. "I put myself in situations, I go by instinct and let the moment take over," confides this observer on the alert, who aspires to rediscover the spontaneity of street photography as practiced by its pioneers, Robert Franck and Walker Evans. The point of his work, in the end, is to suggest that there is a universal simplicity to life even in the most extreme environments.

Bio

Born in 1969 in Switzerland, Steeve luncker lives and works in Geneva. Having trained at Vevey photography school, he has been a member of Agence VU' since 2000.
A press photographer, he works part-time for a Geneva newspaper. At the same time, he has spent several years creating a major work on death, looking to directly reveal this little-known reality, far from the fictional representations to which we are accustomed. Whether he chooses to accompany an end-stage AIDS patient for two years or to face the reality of the Gaza strip, to explore behind the scenes of fashion shows or take an interest in the profession of prostitution, Steeve luncker tirelessly asks questions with the same radical approach. Beyond clichés and media distortions, his gaze always focuses on mankind.
In 2013, his report on Yakutsk won the "Man and Nature" award from France's National Natural History Museum, supported by the Veolia Environnement Foundation.



IMA-GINE 2050

Building the future circular economy

Predicting the future isn't always easy but it's necessary. Investments in major infrastructure require a long-term vision, often taking place over a 25 to 30-year period. Veolia is getting ahead of the game and has released its Imagine 2050 report anticipating urban waste, water and energy requirements as seen from a UK perspective.

“Its unique positioning in waste, water and energy and as a supplier of technological solutions for industry and local authorities gives Veolia a key role in this revolution represented by the circular economy.”

Laurent Auguste, Executive Vice President Innovation & Markets, Veolia

70%

of the world population will live in an urban environment by mid-century.

No one knows what 2050 will look like... But that doesn't prevent Veolia from experimenting, anchoring new idea in its current and developing practices. One of those ideas is the circular economy, already considered by many companies and organizations as a pathway toward a sustainable future. By the middle of the century, the circular economy, according to Veolia's executive vice-president for the UK and Ireland, Estelle Brachlianoff, it will be necessary to ensure we use our resources properly. She says: "My dream is that all materials will have a second, third and fourth use by 2050, but we must be able to build facilities that can offer this reuse.
As a nation we must be open to all opportunities that could help create resources for new products or energy sources. That's a far cry from where we are now. In truth, we seem to be going round in circles, without realizing that the solution lies in a circular economy based on continuous reuse. We must push the boundaries to ensure that everyone realizes they have their part to play and it can only be achieved by working together. Using our expertise in the fields of water, energy and waste, we can help preserve scarce natural resources and manufacture and produce green products and energy sources."

Urban infrastructure

According to academics from the London School of Economics (LSE), who helped produce the report for Veolia, some urban centres in developed nations are gradually guiding citizens to lead sustainable lifestyles through high-density •••

Richard Kirkman,

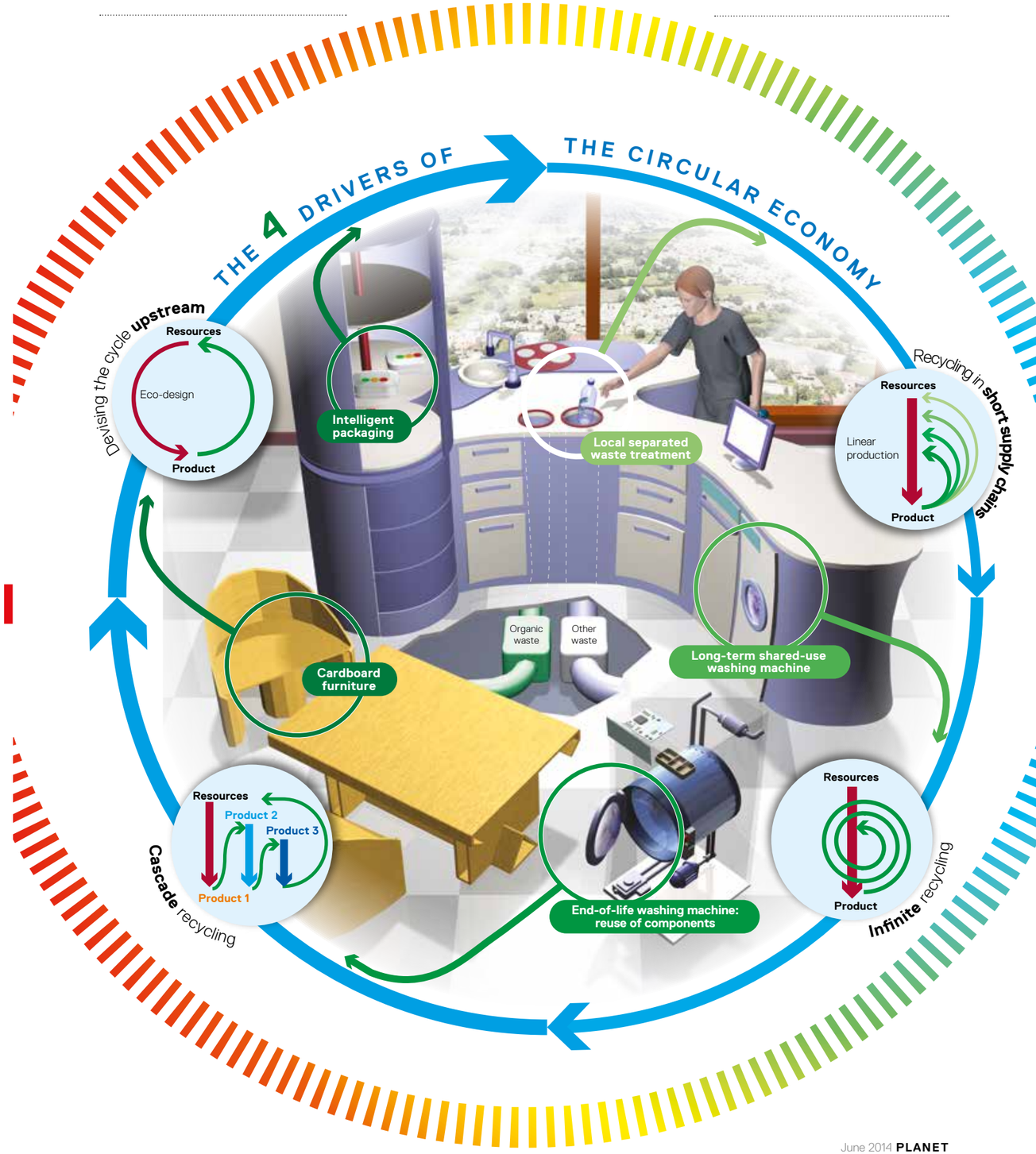
Technical Director, Veolia Environmental Services

Why was Veolia interested in looking ahead to 2050?
Veolia was interested in looking ahead to 2050 because we needed to consider how people will be living in the future and what kind of services and products will be needed for our municipal and industrial clients. This report looks at 2050 and considers the steps we need to take in order to get to that place.

Why does the report focus on cities?
In terms of urban lifestyles, we expect 70% of people to be living in cities. This could mean up to double the amount of people living in towns and cities around the world. So we really need to rethink the energy services, the water services and how we deal with material flows in society.

How will waste resources be collected in the future?
People will live in tighter spaces, in smaller living areas, so there probably will not be room to have six or seven bins with different materials in them. So we have thought about how we can remove material without bins by having a vacuum system. This technology exists already and some cities have it.

What about the self-cleaning bathrooms mentioned in the report?
We were thinking about people's use of water and the technology they use and will there be enough water. We think people will use less, as there will be self-cleaning materials, less water used in bath and showers, and this will enable us to use resources such as water in a much more efficient way.



living, sharing of goods and services and the reuse and remanufacturing of goods. These cities also have the ability to invest in innovative technologies and infrastructure that can accelerate this transition. This is because high-density living and ease of creating human networks allows for innovation in infrastructure to be developed. The Imagine 2050 report also outlines an alternative scenario: if we don't opt for a sustainable resource-efficient model then we carry on as we are in a linear fashion. But gradually we'll find that our lifestyle patterns are more resource-hungry in a world where an increasing population is also competing for those resources.

As we progress toward 2050 and adopt the circular economy, the report suggests we could increasingly live in buildings that have been designed with sustainability in mind. So these homes will contain sorting infrastructure that use nanobots to separate materials into different types after they have been placed in a vacuum system. These can then be collected by industry ready for recycling or reuse. Organic waste will be used to heat our homes with vacuum pipes also taking this waste to a district heating centre, where it will be returned to the home as heat. Our water supply for our baths and showers may also use ultrasonic vibrations to remove dirt and reduce use of water. We could also be growing plastics from plants rather than oil sources. These plants will be grown in high-rise apartments in the cities, where we will also use similar buildings as urban farms for food.

Open University senior lecturer Dr. Stephen Burnley argues that these urban farms will become an increasing part of city life as we head into the future. "If the LSE predictions on population growth and people increasingly moving into cities are correct, then we will need to have urban farms to feed all these people. Plus, it will be more efficient producing food closer to where it is needed. It will also make the cities better places to live with buildings filled with plants that will improve the urban environment."

Circular business models

UK businesses are also thinking about the circular economy and resource efficiency and see it as essential to their future prospects. Whitbread is a large company that has its origins in the UK and is now expanding across the world. It operates the Premier Inn hotels, the Costa Coffee chain and a number of restaurant and pub businesses. "Resource efficiency is vital for us," says Whitbread environment manager Ben Brakes. "Water efficiency and energy efficiency are a big deal for Whitbread and we have targets to reduce our use of both as we are a large user. With over 50,000 hotel rooms in the UK, that is a lot of people having showers for example, and so we have introduced aerated taps and shower heads to maintain good shower pressure while reducing water use. We are also introducing more LED lighting to reduce energy use and introducing solar panels on our hotels where we can. We run an environmental balance sheet so that we can show that our environmental investments are paying us back in terms of cost saving or extra revenue. Now we are also looking at our supply chain, and working with companies here to see how they can make changes that benefit us and them and Veolia is one of our partners in that. We are keen on the circular economy, because we know it will benefit our business and our customers." Although it is still early days in the UK developing a circular economy, the indicators are already there that major companies, city councils and other parts of the potential circular supply chain are moving toward where Veolia thinks we will be in 2050. Maybe it isn't so hard to imagine the future after all.

Savvas Verdis

Senior research fellow at LSE Cities, on why the circular economy and the Imagine 2050 report interests London School of Economics

"The LSE has been heavily involved in looking at urbanization trends across the world. Veolia wanted to see how these trends and development of new technologies could be applied in the future. We therefore gave Veolia scenarios of how we could live in 2050 based on our research of high-density and low-density living. The benefit of high-density cities is a lower per capita cost for infrastructure. Combined heat and power is more effective in a city like London, for example, than a small town because of the huge cost differential in providing this infrastructure in a high-density city compared to a low-density one. We know that cities like Hamburg are looking at how the circular economy can have a positive impact on jobs and growth and how it can benefit from its regional and national economy in Germany and be less reliant on volatile imports. The circular economy is sometimes characterized as off-grid as you can develop closed loop ecosystems, and it is these new models of urban thinking that are interesting to us."

Recyclers are exposed to many dangers: toxic fumes when they burn plastic cables to recover copper, the mercury contained in low-energy light bulbs, etc.

Health and safety steps for recyclers in Manila

Millions of high-tech objects end up in open landfills located in the poorest countries. One such country is the Philippines, where the absence of legislation makes it one of the destinations "of choice" for waste electrical and electronic equipment (WEEE). In the suburbs of Manila, where thousands of people have found themselves living in waste dumps locally called the "Smokey Mountains", entire families make a living from salvaging waste. Under these conditions of extreme poverty, this job is just as good as another. For these unofficial e-waste recyclers – including pregnant women and children – who handle toxic products without taking any precautions, the NGO Doctors of the World has joined forces with the Veolia Foundation and e-waste treatment specialists from Veolia. Together, they are organizing sessions directly at the landfills to raise awareness of the risks of exposure to chemicals and encourage the recyclers to adopt best practices (distribution of protective equipment). An initial diagnostic mission carried out by volunteers from the Veolia Foundation made it possible to analyze high-risk practices and then train the teams on the ground in the different types of waste, the extraction of raw materials, health protection measures, etc. The long-term aim is to encourage the deployment of cooperatives, which help to rationalize and pool recycling activities.

More information

Corporate sponsorship awards
On February 12, 2014, the program for the prevention and reduction of environmental risks among recyclers in Manila received the French corporate sponsorship for the environment and sustainable development award (skills sharing category) from the French Ministry of Ecology, Sustainable Development and Energy.

e-waste is rising
The waste generated by cell phones, computers, televisions, etc. is piling up at a rate of 40 million metric tons per year*. It is one of the waste streams experiencing the strongest growth, rising by 3 to 5% a year** in industrialized countries. This growth is set to reach 200 to 400%** by 2020 in China, India and South Africa!

*Source: United Nations Environment Programme
**Source: CNRS (French National Center for Scientific Research)

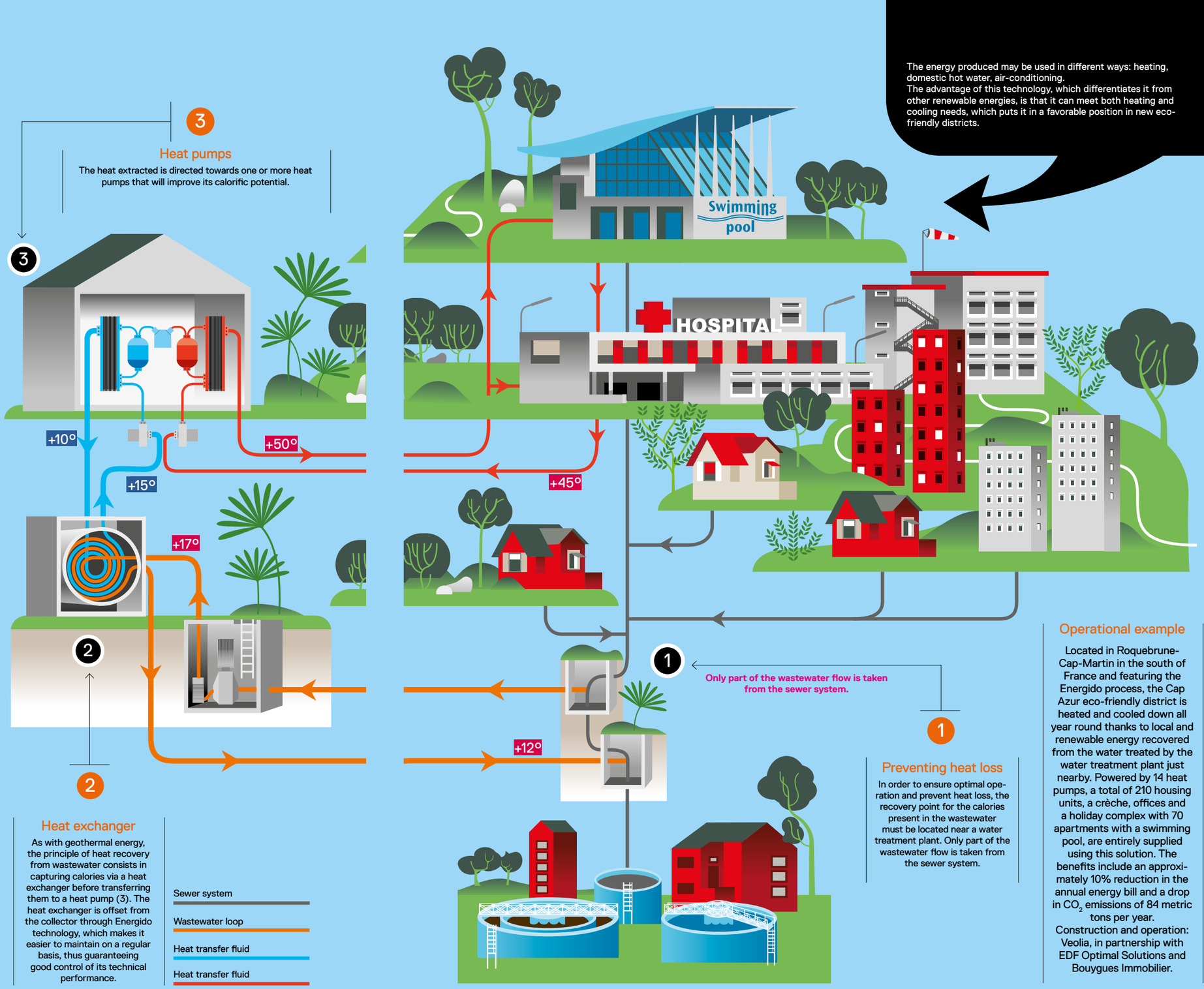
Wastewater, a wealth of energy

Taken from a sewer system, wastewater contains calories that are a permanent and renewable source of energy. This potential has not escaped Veolia, which is behind the Energido process. Explanations.

We may be in a period of witnessing the development of renewable energies, but some of them (solar, wind power, etc.) pose a serious problem: they only produce their electricity intermittently. On the contrary, heat recovery from sewer systems delivers a permanent and continuous source of energy. This is why energy service providers are attaching increasing importance to this alternative.

Patented at the end of 2011 and commercially operated on numerous sites since then, the Energido solution developed by Veolia has the huge advantage of offering an original technology compared to other similar methods: an offset heat exchanger. Independent of the collector, this exchanger conveys the calories generated by the sewer system to a heat pump. Whereas in other technologies, it is located directly in the collector, which leads to strong technical constraints in terms of installation and maintenance, in the Energido solution, the exchanger offset in this way offers enhanced control of the system's thermal performance.

This is a key point in this type of project, in which the initial investment is paid off through the energy savings made over time.Not including the initial investment, the return on investment for an installation of this kind is thought to be seen over five to eight years, ultimately leading to an approximately 30% reduction in energy bills compared to a conventional gas heating solution. The targets in view for deploying this new R&REn (Renewable and Recoverable Energy) are aquatic centers, major heat consumers, shopping centers, hospitals or new districts (business districts, eco-friendly districts) that require heating in winter and cooling in summer. Today, Energido is used at four facilities in France: aquatic centers in Arras and Marseille, the Roquebrune-Cap-Martin eco-friendly district and a composting platform in Toulouse. n



The water tree, a refreshing idea

You would normally expect a tree to offer fruit, wood, and possibly shade. Hope Tree is not quite like other trees: it is able to produce, store and distribute drinking water in environments where the resource is in short supply. A winner at the Red Dot Design Awards 2013, this project dreamt up by designers from the University of Zhejiang (China) looks to refresh the concept of the public fountain thanks to an ingenious autonomous device.

Hope Tree puts itself forward as a new kind of dew catcher: the humidity in the air, absorbed by its "foliage" in an alveolar structure, runs along its "trunk" and is filtered and stored there, before being distributed on a self-service basis. Designed to supply an additional source to populations in the tropical deserts of Africa and South America, where there is a major temperature difference between night and day, this experimental system may find a home just about anywhere, in rural districts and residential areas alike.

"We are still in the study phase, but we have already found a material capable of optimizing water collection," emphasizes Jiang Jieyu, the head designer. "Before going any further, we have to acquire more climate data to be able to estimate our project's actual performance." It remains to be seen how many volumes of water Hope Tree is capable of producing.

In the meantime, this patent-pending tree of hope has already caught the attention of a number of NGOs attracted by this alternative to more traditional solutions for capturing condensation, such as dew collectors or fog-catching nets.

Design: Zhejiang University
Designer: Chi Cheng, Fang Zishuo, Hao Libin, Hu Tengwen, Jiang Jieyu, Jin Xiaoneng, Liu Xiaolong, Tong Shang.

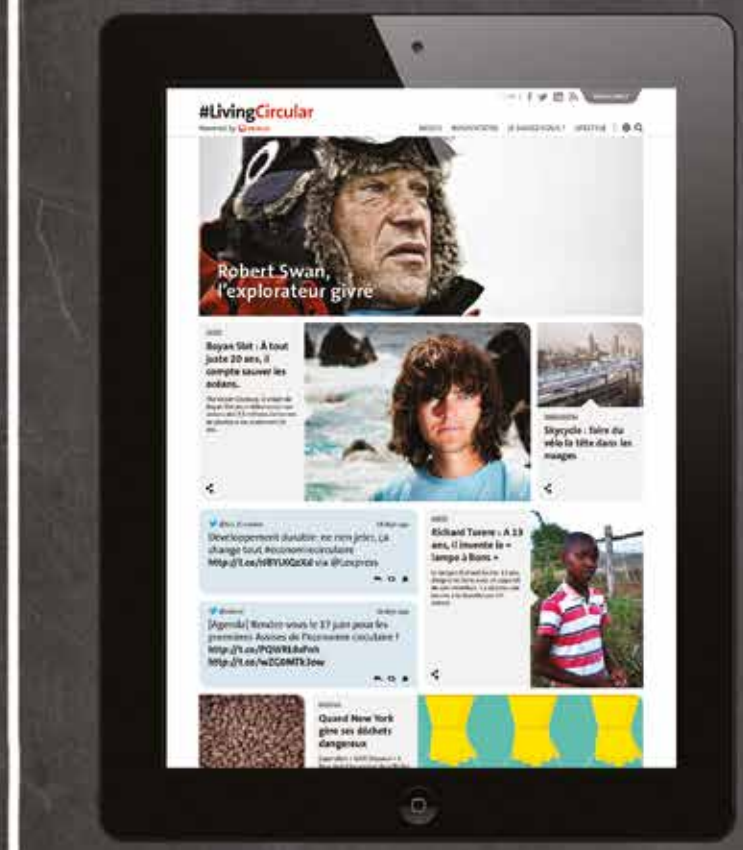
The Red Dot Product Design Awards have existed since 1954 and become an international benchmark for the design industry.

In 2013, the Red Dot Design Awards released its winners' list. Students and teachers from the College of Computer Science and Technology received a total of 16 awards, three of which were jointly won by Industrial Design and Digital Media students.

Since 2006, Zhejiang University students have won a total of 68 Red Dot Awards, making Zhejiang University one of the universities with the largest number of Red Dot Awards around the world.

Powered by

Start the conversation there



Go further here

livingcircular.veolia.com
our new hub to discover and share the circular economy