Rare, precious, and fragile, natural resources are not infinite. SUEZ ENVIRONNEMENT Group’s businesses are being transformed to support cities and industries in the optimal management of resources essential to life and the future.

www.suez-environnement.com
SUEZ ENVIRONNEMENT

With activities across five continents, and 79,220 employees, SUEZ ENVIRONNEMENT supplies 92 million people with drinking water, and 65 million with sanitation services. It provides nearly 52 million people with waste collection services and recovers over 14 million tons of waste as secondary raw materials and energy.

To protect the future, we promote a more efficient use of our resources: optimize processes, create new alternatives for water resources, and transform today’s waste into tomorrow’s resources. In the growth model of the circular economy, SUEZ ENVIRONNEMENT is a leading player. We position ourselves as a partner for cities and industry to support them in making the most of their resources. Against this backdrop, there is a significant opportunity for the Group to develop.

In line with our commitment to sustainable development, SUEZ ENVIRONNEMENT continues to pursue growth internationally, we are innovating our business lines to bring greater added value to its clients and to the world that surrounds them, both today and for tomorrow.
An ambitious strategy for a changing world and the challenges we face.

Urbanization, population growth, industrial development in emerging countries, climate change, heightened pressure on resources... Across the world, cities and industries must find innovative solutions to meet these global challenges. For nearly 150 years, SUEZ ENVIRONNEMENT has been reinventing its water and waste businesses and is more than ever poised to partner with its customers to optimize the management of resources essential to life and the future. Water is fragile – we must protect it, conserve it, and develop alternative resources. Today’s waste is increasingly becoming tomorrow’s resources. It must be sorted, recycled, and recovered to turn it into secondary raw materials and renewable energy sources for sustainable development.

With a successful business model, a robust policy of continuous innovation, and the commitment of its 79,220 employees, SUEZ ENVIRONNEMENT has a wealth of assets to implement its ambitious growth strategy and seize new development opportunities, especially in the international market.

In July 2013, the SUEZ ENVIRONNEMENT launched a new phase in its history. The shareholders’ agreement that bound GDF SUEZ, SUEZ ENVIRONNEMENT, and five other shareholders enabled our Group to consolidate its strategy and build a strong identity.

Since July 2013 and the expiration of the shareholders’ agreement, SUEZ ENVIRONNEMENT has been writing a new chapter in its history, based on continuity. SUEZ ENVIRONNEMENT is an international group that has excellent prospects for growth. Its business model is relevant and efficient, its balance sheet is strong, and its assets are many.

The relationship between SUEZ ENVIRONNEMENT and GDF SUEZ is one of those assets, owing to the closeness of the two groups’ businesses and their shared past. GDF SUEZ is now the main shareholder of SUEZ ENVIRONNEMENT and a strategic development partner for its businesses in France and abroad. Industrial and commercial cooperation between the two groups is a proven success, for instance, in the Middle East, where seawater desalination requires significant energy inputs, or in areas such as bioenergy, a key concern for regional planning in the coming years.
Financial strength
2013 was marked by an especially difficult macroeconomic environment, especially in Europe, but our Group showed its ability to adapt and to withstand the crisis.

Without a doubt, this was a very positive year for our Group, which succeeded in creating value despite sluggish industrial production almost all across Europe. We achieved our ambitious goals and our results reflect our financial strength and the relevance of our business strategy.

This is especially reflected in the strong organic growth in EBITDA and the control of our debt. We focused heavily on cash generation by strengthening the Group’s financial discipline. With revenues of €14.6 billion and EBITDA of over €2.5 billion, we succeeded in raising the Group’s profitability. In addition, we remained selective in our investments, with a budget of €1,012 million this year used to lay the foundation for the Group’s growth and development in the coming years.

We are committed to accelerating the development of SUEZ ENVIRONNEMENT, using our financial flexibility to capture the most promising growth opportunities. I am convinced that we will soon emerge from the crisis, and that we will be stronger than when it began.

Commercial performance in our historical markets
Without a doubt, the past year was very positive for our Group. We met with great commercial success in our historical markets in France and Europe, and in our key markets outside Europe. In our two businesses, our know-how is recognized by our customers, both public and industrial. Along with this technical know-how, we have genuine people skills that set us apart, typified by an ongoing dialogue and a willingness to co-create solutions with our stakeholders, and by the great dynamism of our sales and marketing teams. Our market share is growing thanks to contract renewals and new contracts won. Consider some examples that, for me, are emblematic of 2013.

- We won the wastewater treatment contract for the Barcelona Metropolitan Area. By operating across the entire water cycle for 35 years, Aigües de Barcelona will be a great showcase for our know-how and technology.
- In waste, I would highlight the recent signing of the construction and financing contract for the West London energy recovery plant. This contract supplements the 12 contracts that we already manage in the United Kingdom.

- Outside Europe, we have strengthened our position in key countries such as the United States, Australia, and China.

Editorial by Jean-Louis Chaussade,
Chief Executive Officer of SUEZ ENVIRONNEMENT

“Our results for the past year reflect our financial strength and the relevance of our business model and confirm the strategic directions that we have taken. We must remain poised to capture new opportunities and prepare for the future.”

ACCELERATE OUR DEVELOPMENT BOLDLY AND DECISIVELY
We have had a presence in Asia for many years, and we have consolidated our position as number one in waste management in Hong Kong, after winning the contract to operate the North Lantau station. We are also a leader in water management in the United States, which is a regulated market. The contractual model we offered to the city of Bayonne, New Jersey, to upgrade water and sanitation systems without adding to the burden on its finances, opens up promising opportunities to us in that country.

**Growth strategy**

The Group must boldly and decisively promote optimal resource management for the future. The coming years will be years of opportunity and choices. In a world that is growing, where natural resources are limited, we must promote a more rational use of natural resources: rapid urbanization and an expanding population are leading us to optimize the use of resources and to consume fewer raw materials. The recovery of waste into secondary raw materials is therefore a key issue for everyone. Similarly, in the water sector, all water use and demand must be managed in a concerted fashion because, within about 20 years, 40% of the world’s population is expected to be living in areas of water stress or drought.

Our strategy is clear. The Group must promote and deploy more effective ways of managing natural resources. It must also be a pioneer in producing new resources to prepare for the demands of a growing world. The circular economy is becoming increasingly necessary and we are key players within it. Our businesses are being transformed: instead of operators, we are becoming managers of ever-scarcer resources. Technology and innovation play a major role and we are participating fully in that. The Group has developed four strategic priorities: smart water and new water services; waste recovery; industrial services; and international development.

In the water sector, our customers’ environmental concerns are multiplying. They are more focused on water quality and want to know – often in real time – the details about their water consumption. We enable them to conserve and better protect their water resources through new services that are placing information technology at the center of our business activities and transforming them.

In the waste sector, thanks to developments in national regulations, our targeted investment policy, and our R&D and innovation efforts, we now have a network at the forefront of technology that allows us to set a direction for waste recovery, whether biological, organic, or energy-related, with a special focus on biogas production.

With more than 12 million metric tons of secondary raw materials returned to the market, the Group is now a leading player in recycling and waste recovery. We estimate that by 2018, three-quarters of the waste we collect in Europe will be recovered.

The industrial market, meanwhile, is expanding rapidly. Manufacturers have, and will in the future continue to have, a great need for optimized water and waste management. Our Group intends to strongly penetrate this international market. As it happens, international development is our fourth and final strategic priority. The Group must accelerate it in the highest-growth areas, while controlling its risks. We must use our existing positions, where our know-how is recognized, as a springboard for growth, while continuously ensuring that this growth creates value.

**Honing our commitments**

We will implement our growth and development strategy while honoring our commitments, our values, and our identity.

Natural resources and raw materials are becoming more scarce, raising the cost of access. Our Group must be responsive, ambitious, and innovative. This will require a real transformation of our businesses, which will have to be implemented by motivated employees. Accordingly, our human resources policy must be able to support this transformation in terms of skills and training management. Developing internal talent is therefore one of the priorities of our sustainable development roadmap for 2010-2014.

The objectives of this second roadmap are ambitious. They are organized around three major themes: first, innovation, to support our customers in managing resources and improving their environmental performance; second, the development of internal talent, to make our employees agents of the transformation towards an economy of resource regeneration; third, and last, the strengthening of our contribution to combating the problems of underdevelopment and poverty. In the area of sustainable development, I believe it is imperative that our Group be a global leader. There can be no leadership in our sectors without well-informed recognition in this field, both internal and external. Every day in our businesses, we must embody the values of solidarity partnership that are our hallmark, and we must make our sustainable development policy a strong lever of differentiation.

"In a time of crisis, our Group showed that it was strong. In our historical markets, we met with commercial success and proved our ability to perform. We are now tackling our growth strategy, boldly and decisively, and honoring our commitments."

Jean-Louis Chaussade,
Chief Executive Officer of SUEZ ENVIRONNEMENT

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**Resources for all, resources forever**

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Jean-Louis Chaussade,
Chief Executive Officer of SUEZ ENVIRONNEMENT

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**Innovating in our businesses, growing our group**

79,220 employees worldwide

14.6BN euros in revenue

31% of revenues generated outside of Europe
Management Committee

In 2013, SUEZ ENVIRONNEMENT consolidated all of its operations into three departments: Water, Waste, and International. The Group will use this strengthened organization to ease coordination between its business activities and its markets, to focus its efforts on strategic priorities, and to accelerate its development.

To find out more about the SUEZ ENVIRONNEMENT Management Committee:

From left to right
Thierry Maillet, Executive Vice President in charge of Innovation and Business Performance / Marie-Ange Debon, Senior Executive Vice President in charge of International Water and Waste / Jean-Yves Larrouturou, General Secretary / Denys Neymon, Executive Vice-President in charge of Human Resources in charge of Health & Safety, Security, and Diversity Development / Jean-Louis Chaussade, Chief Executive Officer of SUEZ ENVIRONNEMENT.

From left to right
Jean-Marc Boursier, Senior Executive Vice-President in charge of Finance, Purchasing, SAFER Oversight, Investment Committees, and Performance Improvement Plans / Frédérique Raoult, Executive Vice-President in charge of Sustainable Development and Communications / Christophe Cros, Senior Executive Vice-President in charge of the Waste Europe activities, operated under the SITA brand / Angel Simon, Senior Executive Vice-President in charge of the Water Europe activities (Agbar, Lyonnaise des Eaux).
Governance

The Board of Directors of SUEZ ENVIRONNEMENT and its four committees bring together experts and experienced professionals from different backgrounds.

BOARD OF DIRECTORS

The Board of Directors of SUEZ ENVIRONNEMENT has opted to split the functions of Chairman of the Board and Chief Executive Officer. Gérard Mestrallet holds the office of Chairman of the Board, and Jean-Louis Chaussade is the Chief Executive Officer of the company. The Board of Directors establishes operational guidelines for the Group and oversees their implementation. It has 17 members, appointed for four years, including, at December 31, 2013:

— 9 independent directors;
— 4 women directors; and;
— 4 non-French directors.

In 2013, the Board of Directors met eight times with an attendance rate of 92.2%.

The Strategy Committee advises and submits its recommendations to the Board of Directors on the strategic orientations planned by the Board or proposed by the Chief Executive Officer, and on all plans for internal and external growth, disposals, strategic agreements, alliances, or partnerships submitted to the Board of Directors.

The Ethics and Sustainable Development Committee ensures compliance with the individual and collective values on which the Group bases its actions and the rules of conduct that each of its employees must apply. These values include the Group’s specific responsibilities with respect to environmental protection and improvement and sustainable development. The committee also establishes and evaluates the Group’s health and safety policies. Lastly, it reviews the corporate social responsibility policies.

The Appointments and Compensation Committee is mainly tasked with examining issues relating to the composition of the Board of Directors and the committees, developing succession plans for key management personnel, and analyzing executive compensation and employee bonus, profit-sharing, and share ownership plans.

The Audit and Accounting Committee assists the Board of Directors in ensuring the accuracy and fairness of the parent company and consolidated financial statements of SUEZ ENVIRONNEMENT as well as the quality of risk management, internal control, and information issued to the shareholders and the markets.

The Ethics and Sustainable Development Committee addressed the following matters in 2013:

— the review of the business and project progress;
— the financial position, results, and financing situation of the Group;
— corporate governance, particularly the change in the composition of the Board of Directors and its committees;
— follow-up on the implementation of measures required after the end of the shareholders’ agreement.

2013 UPDATE

The Board of Directors addressed the following matters in 2013:

— the review of the business and project progress;
— the financial position, results, and financing situation of the Group;
— the change in the composition of the Board of Directors and its committees;
— follow-up on the implementation of measures required after the end of the shareholders’ agreement.

RESOURCES FOR ALL,
RESOURCES FOREVER

1 — Gérard Mestrallet
Chairman of the Board of Directors of SUEZ ENVIRONNEMENT and Chairman & CEO of GDF SUEZ

2 — Jean-Louis Chaussade
CEO of SUEZ ENVIRONNEMENT

3 — Guillaume Pepy
Chairman & CEO of SNCF

4 — Lorenz d’Este
Managing Partner of E. Gutzwiller & Cie

5 — Delphine Ernotte Cunci
Executive Vice-President of the Orange Group and Executive Director of Orange France

6 — Gilles Benoist
Director

7 — Valérie Bernis
Executive Vice-President of GDF SUEZ in charge of Communications and Marketing

8 — Harold Boël
CEO of Sofina

9 — Alain Chaigneau
General Secretary of GDF SUEZ

10 — Isabelle Kocher
Executive Vice-President, in charge of Finance of GDF SUEZ

11 — Jean-François Cirelli
Vice-Chairman and President of GDF SUEZ in charge of the Energy Europe Business Line

12 — Gérald Arbola
Director

13 — Penelope Chalmers
Executive Vice-President, Strategy and Communications of GDF SUEZ Energy International

14 — Olivier Pirotte
CFO of Groupe Bruxelles Lambert

15 — Nicolas Bazire
CEO of Groupe Arnault SAS

16 — Amaury de Sèze
Vice-President of Power Financial Corporation of Canada

17 — Jérôme Tolot
Executive Vice-President of GDF SUEZ in charge of the Energy Services Business Line
Key figures in 2013

Results for the year confirm the stature of a global Group, established on five continents, and engaged in healthy and balanced growth, including through commercial successes in all its operating regions.

The Group achieved its financial targets in a difficult economic environment in Europe, marked by sluggish industrial production. It posted sharply higher results, improved its operating margin, and enhanced the strength of its balance sheet by reducing its debt.

Its social performance was also strong: the attention focused on the Group’s employees produced significant results in terms of skills development, health and safety, and commitment. SUEZ ENVIRONNEMENT can rely on its effective and relevant business model, its financial flexibility, and the enthusiasm of its teams to implement its growth strategy and to seize opportunities as they arise.
**Key Figures in 2013**

"In 2013, we strengthened the Group’s financial discipline. Today we have the financial flexibility we need to accelerate the Group’s growth and capture the most promising investment opportunities."

Jean-Marc Boursier, Senior Executive Vice-President in charge of Finance

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INNOVATING IN OUR BUSINESSES, GROWING OUR GROUP

"Relationships with our shareholders and stakeholders play a key role in our performance. Our Group must therefore be a benchmark of corporate governance, risk management, and ethical compliance."

Jean-Yves Larrouturou, Group General Secretary

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RESOURCES FOR ALL, RESOURCES FOREVER

Employees drive excellence at SUEZ ENVIROUMENMT, and social performance is an essential condition for business performance. The Group’s pays special attention to the health and safety of its employees and strives to create an environment in which everyone can grow and develop his or her talents.
A presence on five continents
Firmly rooted in its historical markets, SUEZ ENVIRONNEMENT today generates nearly 30% of its revenue outside Europe. It has three key international markets (United States, China, and Australia) and in 2013 continued its drive to capture new markets, developing business in India, the Middle East, and South America.
New Contracts in 2013

In 2013, SUEZ ENVIRONNEMENT consolidated its positions in its historical water and waste markets. In the water sector, France and Spain remain strongholds in Europe for the Group, which also won some major new contracts, especially in its waste management activities in the United Kingdom and Poland, among others. In the rest of the world, development is accelerating in the Middle East, Brazil, and India.

In its activities, SUEZ ENVIRONNEMENT relies on state of the art know-how and innovation, as well as on our highly-skilled and committed employees. Expert in the entire water and waste cycles, the Group is able to design solutions for and with its customers that meet their challenges and their needs for more efficient management of their resources. In a growing world that requires ever more cooperation, collective intelligence, and creativity, its culture of partnership and dialogue is an increasingly distinctive strength that makes the Group stand out. It is upon this strong foundation that SUEZ ENVIRONNEMENT is preparing for the future.
In 2013, the urban community of the Marseille metropolitan area in Provence awarded SERAMM, a subsidiary of Lyonnaise des Eaux, a 15-year public service sanitation concession. SERAMM will handle the collection and management of urban wastewater and rainwater for 900,000 inhabitants, as well as for the 2 million tourists who annually visit Marseille. This contract renews and expands the partnership with the Marseille metropolitan area, with one key aim: to provide the city’s residents with standard-setting service at the forefront of innovation.

The construction of a new, 50,000 cubic meter wastewater reservoir will allow better management of heavy rainfall. Phâne, an ultra-modern smart control center, will steer the entire wastewater treatment system and monitor its effects on the environment. An interactive application called “Digital Gatekeepers”, will allow citizens to report any malfunction or environmental damage. SERAMM will also implement a “positive biodiversity” program that will enrich the fauna and flora of the Bay of Marseille to offset the city’s impact on ecosystems.

Saint-Étienne Métropole renewed SITA’s concession for six years, beginning in June 2013, for household waste collection in a portion of its area. This subsidiary of SUEZ ENVIRONNEMENT was selected for its innovative proposals, including a solution that uses relay trucks to ensure continuity of service. It also developed information control tools that ensure transparency in service management, with real-time management of daily events, thanks to embedded computing.

SITA also conducted a local communications campaign in the press and through a hotline to improve information on the frequency of collection and changes to collection days. These actions have had a very positive effect on user satisfaction: 5 calls per day, against 200 per day at the start of the previous contract. Finally, the sides of the collection vehicles will be used as billboards to display messages about selective sorting.
Spanish Metropolitan Area

**PROVIDING AN EXPERT OVERVIEW OF WATER**

*Type of contract:* Agbar, historical operator of the water supply system in Barcelona, created a public-private partnership (85%-15%) with the Barcelona metropolitan area, which will manage all water and sanitation services. *Amount:* over €6 billion in total. *Duration:* 35 years. *Value added:* Agbar will enable Barcelona to benefit from its experience across the entire water cycle and its expertise in new technologies applied to water management (smart water and new services).

In 2013, the Barcelona metropolitan area renewed its confidence in Agbar, its water supply network operator for almost 150 years, with a 35-year contract. It also extended their cooperation to sanitation services. For Agbar, this contract represents an additional €2 billion in revenue over 35 years. Combining the management of drinking water and sanitation services will achieve economies of scale and make Barcelona’s water service a global technology showcase.

Three million people in 24 municipalities will benefit from Agbar’s experience across the entire water cycle. Its expertise in conservation and the rational use of resources will be particularly strategic for this region, which experiences water stress and heavy rains in equal measure. Agbar is a leader in the Spanish water market, which has strong growth potential; the country will have to invest in the coming years, especially in the treatment of wastewater.

UK — West London Waste Authority

**TRANSFORMING WASTE INTO ENERGY**

*Type of contract:* Household waste recovery in West London (1.4 million inhabitants). SITA UK will build an energy recovery plant, for an investment of £270 million. *Amount:* €900 million. *Duration:* 25 years. *Value added:* A drastic reduction in the volume of landfilled waste, and more than two million tons of CO2 saved over the lifetime of the contract.

Beginning in 2016, 96% of waste from West London will not go to a landfill; whatever can’t be recycled will be processed at an energy recovery plant built and operated by SITA UK, the Severnside Energy Recovery Centre (SERC), at a rate of 300,000 metric tons per year. That’s what’s behind the public-private partnership contract signed in 2013 with the West London Waste Authority (WLWA), the delegating public authority. SERC will produce the equivalent of the electricity consumption of 50,000 homes and will also supply hot water to local businesses.

The sale of electricity and the fees received for waste treatment from third parties will bring the total revenue to £1.7 billion over 25 years. In 2013, SITA UK and its partners signed multiple contracts with communities who want to recover maximum value from their waste instead of burying it.
The new wastewater treatment plant in the Panamanian capital was designed to sanitize 238,000 cubic meters of urban wastewater per day and to treat the effluents of more than one million people. Built by Degrémont and its partner Odebrecht, it will be operated by this Group subsidiary for four years. The Panamanian government plans to rehabilitate the Panama Bay, which is listed for its international environmental interest.

The facility is optimized from an energy standpoint: biogas from sludge digestion and a heat recovery and cogeneration system make it 35% energy independent.

SITA Waste Services will manage the transfer station on North Lantau, the largest island of the Hong Kong archipelago, for a period of ten years. Able to receive 650 metric tons of waste daily to be shipped by container to treatment centers, the station is equipped with mechanisms to control dust and odors, treat wastewater, and prevent noise pollution.

This SUEZ ENVIRONNEMENT subsidiary also won a tender, as part of a joint venture with its partner ATAL Environmental Engineering, for shipping up to 1,900 metric tons a day of dewatered sludge left over from wastewater treatment. It will build two ships equipped with diesel-electric hybrid engines – an innovative low-emission solution. This contract establishes SITA Waste Services as the leader in Hong Kong in waste and sludge shipping by sea.
Four strategic markets

The scarcity of resources essential for life is becoming a global concern; the coming years will therefore be rich in new opportunities for SUEZ ENVIRONNEMENT.

Water is a fragile asset that requires intelligent management. By increasing the power and connectivity of new technologies, new water services are helping to better protect this resource.

Waste is piling up and raw materials are becoming scarce. The solution to this problem is the recovery of waste in all its forms.

Manufacturers are engines of economic growth; they are seeking innovative solutions for the optimal management of their resources.

Internationally, the Group will offer its best solutions – technological, financial, and contractual – while adapting them to local needs.
A DOPTING NEW TECHNOLOGIES FOR WATER PROTECTION

“SUEZ ENVIRONNEMENT uses its know-how of the entire water cycle and the water sector to design solutions that are in tune with the needs of its customers and to offer them the most comprehensive range of smart water products. Our strong culture of partnership also allows us to develop key alliances in this field, where multiple skills intersect.”

Angel Simon, Senior Executive Vice-President in charge of the Water Europe activities

€300M

That’s the revenue generated by SUEZ ENVIRONNEMENT from smart water and new services. The Group projects growth of over 15% per year in this segment.

Industrialized and emerging countries alike are changing their relationship with water. They’ve realized that it’s fragile. Protecting it is the number one environmental issue for one out of three French citizens. Local authorities want to better control its management and they need more transparency in methods of governance. Consumers are also demanding more information and transparency. New technologies offer an opportunity to meet all of these expectations: they truly can make water management smart.

For SUEZ ENVIRONNEMENT, smart water is both a source of innovation and a new market against a backdrop of structural decline in treated volumes. Agbar and Lyonnaise des Eaux are the Group’s forerunners in this emerging market. They market a joint offering and are developing partnerships (e.g., General Electric, SFR Business Team) to stay ahead in this technological race.

There are already countless applications. With smart meters, AMR (automatic meter reading) can track real-time consumption. Users can therefore better manage their own usage, and even be alerted in case of leaks. SUEZ ENVIRONNEMENT also designs complex systems that enable real-time control of water management across its entire life cycle, from the water table to the sea, and through supply and collection networks. Dynamic and technologically advanced systems, for rainwater management, for example, prevent the risk of flooding by redirecting excess volumes to available reservoirs. In this way, they spared the city of Bordeaux from major pollution following the torrential storms of summer 2013 (see Booklet 2, p. 20). This system can be coupled with close monitoring of aquatic environments to measure the environmental impact of the city and reveal any abnormality. Marseille will benefit from this service (see p. 20), which will even be interactive, allowing everyone to be informed, and helping to protect the environment.

In June 2013, the city of San Sebastian awarded Aqualogy a four-year contract to manage its sanitation network.

Agbar, the Spanish standard-setter in water management, has focused its offer of innovative value-adding services in Aqualogy. Technology and innovation are the hallmarks of this contract, which covers 800 kilometers of sanitation network and concerns some 200,000 inhabitants of the beautiful seaside resort of Spanish Basque Country. Aqualogy has revolutionized network cleaning techniques by circulating a large flow of water through the system that clears away all residues in its passage. This system consumes less water than traditional techniques that operate under high pressure; here, when the cleaning is complete, the water can be reused. But the great technological advance of this contract is the very innovative information system that Aqualogy has proposed to the city. Called “Galia,” it follows the field technicians in their inspections, provides them with technical support, and allows them to transmit the necessary data for effective network monitoring in real time. This information is analyzed and reported to the local authorities through a web portal in a totally transparent fashion. This gives them a preventive tool to ensure the smooth operation of the network, and an analytical tool that helps to prioritize and optimize its human and financial resources.

€1.5BN

is the potential global revenue that will be generated by new water services over the next four years.

15

% of the €200 million in Aqualogy’s consolidated revenue is generated in Brazil, a very fast-growing market.
We have set our focus on waste recovery. SITA is now one of the main contributors to the progress achieved in this area. Today, we recover 1.4 metric tons of waste for every metric ton of waste landfilled. 

Christophe Cros,
Senior Executive Vice-President in charge of the Waste Europe activities

In the 1990s, a “seventh continent” of more than 3 million square kilometers was discovered in the middle of the North Pacific. To avoid such environmental aberrations, while natural resources are dwindling, we must move from a linear system to a circular economy. It is to address these issues along with increasingly stringent regulations that SITA is transforming its business activities to develop leading edge know-how in all areas of waste recovery and to offer efficient solutions to its customers.

Some waste can be recycled into “secondary” raw materials. Such is the case for paper, cardboard, ferrous and non-ferrous metals, and a growing number of plastics, on condition of a fairly meticulous sorting process (see next page). Through innovative processes, it is also possible to dismantle waste electrical and electronic equipment (WEEE) and to disassemble out-of-use vehicles (as SITA does with Renault) and even aircraft (the business of TARMAC, a joint venture between SITA and Airbus). SITA also recycles used cables (joint venture with Nexans) and production waste (with PSA). Manufacturers are seeking to ensure their supplies because, for some metals, shortages will be felt as soon as 2027. As for non-recyclable waste, some types have a high calorific value and can be used to produce electricity and heat for local networks. This solution is currently attracting interest from many local authorities and industries.

Finally, for treating biowaste, there are biological recovery processes that produce compost – and more; indeed, organic matter contains energy since it produces methane as it decomposes. SITA Sverige has even invented a process called BioSimplex for separating biowaste into a liquid phase, with high potential for mechanization, and a solid phase that can also be incinerated (see Booklet 2).

Precise sorting is essential to the creation of new recycling and recovery markets, which require high-quality secondary raw materials. SITA has participated in the testing of new prescription for sorting by building new-generation facilities in several communities. In Le Mans, Valor Pôle 72 sorts waste from selective collection. Its four ballistic screens separate hollow items (such as bottles) from flat items. Its seven optical sorters then take over to recognize paper, cardboard, and different types of plastics, from high-density polyethylene to clear and dark-colored PET. A magnetic overband then attracts ferrous metals, while non-ferrous metals are identified through an eddy current separator. Valor Pôle 72 is expected to eventually become a true “eco-hub”, receiving all types of waste flows (industrial, organic, construction, etc.) for an overall capacity of 123,000 metric tons per year. In Côtes d’Armor, the new-generation Generis sorting center will recover 18,000 metric tons of sorted waste each year. It will thereby give a second life to plastic film and containers.

Other regions have other needs: For Alès, in Salindres, SITA has developed a “mechanical-biological” sorting unit that will process 50,000 metric tons of household waste per year. This technology will be able to isolate recyclable materials and waste with high calorific value, which can be used for energy production, as well as compostable biowaste.

14 M+ metric tons of waste recovered in 2013 by SITA, which provides waste collection services for nearly 52 million people worldwide

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Some waste can be recycled into “secondary” raw materials. Such is the case for paper, cardboard, ferrous and non-ferrous metals, and a growing number of plastics, on condition of a fairly meticulous sorting process (see next page). Through innovative processes, it is also possible to dismantle waste electrical and electronic equipment (WEEE) and to disassemble out-of-use vehicles (as SITA does with Renault) and even aircraft (the business of TARMAC, a joint venture between SITA and Airbus). SITA also recycles used cables (joint venture with Nexans) and production waste (with PSA). Manufacturers are seeking to ensure their supplies because, for some metals, shortages will be felt as soon as 2027. As for non-recyclable waste, some types have a high calorific value and can be used to produce electricity and heat for local networks. This solution is currently attracting interest from many local authorities and industries.

Finally, for treating biowaste, there are biological recovery processes that produce compost – and more; indeed, organic matter contains energy since it produces methane as it decomposes. SITA Sverige has even invented a process called BioSimplex for separating biowaste into a liquid phase, with high potential for mechanization, and a solid phase that can also be incinerated (see Booklet 2).

Precise sorting is essential to the creation of new recycling and recovery markets, which require high-quality secondary raw materials. SITA has participated in the testing of new prescription for sorting by building new-generation facilities in several communities. In Le Mans, Valor Pôle 72 sorts waste from selective collection. Its four ballistic screens separate hollow items (such as bottles) from flat items. Its seven optical sorters then take over to recognize paper, cardboard, and different types of plastics, from high-density polyethylene to clear and dark-colored PET. A magnetic overband then attracts ferrous metals, while non-ferrous metals are identified through an eddy current separator. Valor Pôle 72 is expected to eventually become a true “eco-hub”, receiving all types of waste flows (industrial, organic, construction, etc.) for an overall capacity of 123,000 metric tons per year. In Côtes d’Armor, the new-generation Generis sorting center will recover 18,000 metric tons of sorted waste each year. It will thereby give a second life to plastic film and containers.

Other regions have other needs: For Alès, in Salindres, SITA has developed a “mechanical-biological” sorting unit that will process 50,000 metric tons of household waste per year. This technology will be able to isolate recyclable materials and waste with high calorific value, which can be used for energy production, as well as compostable biowaste.
The intelligent management of water resources is a growing concern for manufacturers.

Businesses are seeking to reduce their environmental impact and are limited by increasingly stringent regulations. They are gradually becoming aware that in the future water scarcity will likely be managed by authorities, who will prioritize people over industry. In Chile, for example, companies are already no longer authorized to tap into groundwater.

In the high-potential industrial water market, SUEZ ENVIRONNEMENT is targeting six industries in particular: oil and gas, chemicals, mining, energy, paper, and agrofood. It is developing its bases in Europe and the United States while targeting countries and regions with strong industrial growth, namely the Middle East, China, and Brazil (see next page). It is leveraging its R&D and innovation capabilities and its many local offices to offer customized technological solutions. By identifying the specific strategic needs of manufacturers, SUEZ ENVIRONNEMENT can offer them a comprehensive solution, thanks to its know-how across the entire water cycle. Beyond environmental performance, managing water consumption is today a factor in business performance.

The treatment of process water, particularly in the food industry, can produce energy instead of consuming it (see the example of Alsation sauerkraut producers in Booklet 2). Furthermore, and when an opportunity arises for recycling, capturing it can drastically reduce the overall consumption of an industrial plant: ENI benefited from this virtuous effect following SUEZ ENVIRONNEMENT’s intervention at one of its refineries in Milan, Italy. For industrial customers, the optimization of resources is comprehensive, and concerns both water and waste management. We are developing a “key account” approach for our customers in order to better understand their needs, offer them the best-suited solutions, and support them everywhere around the world.

16% of water volumes drawn worldwide are for industrial use. This proportion is expected to be over 28% by 2030.

+2% is the annual growth projected for 2010-2016 for oil and gas production, a key sector for the industrial water market.
To benefit from the fast growth of emerging economies, SUEZ ENVIRONNEMENT is relying on its ability to adapt to local needs and models. Wherever it helps us to better understand the issues and to the share risks and the capital invested, the Group forms local partnerships.

In China, it is developing its business through joint ventures with Chinese groups in both water and waste. In Australia, another key market for the Group that is strongly marked by drought, local authorities such as the City of Perth operate through very strong and transparent partnerships, using a so-called “Alliance” model, which SUEZ ENVIRONNEMENT has adapted for the water sector. In countries facing severe water stress, desalination and the reuse of wastewater – technologies that SUEZ ENVIRONNEMENT excels in – are also destined for a bright future.

In other countries such as India, SUEZ ENVIRONNEMENT provides local authorities with expertise and its best technologies for optimizing yields and detecting leaks, but also its know-how and social approach to connecting vulnerable neighborhoods to drinking water and sanitation networks. Finally, the Group is poised to capture emerging opportunities in new markets such as Brazil, for industrial water (see following pages), and Canada, for waste.

SUEZ ENVIRONNEMENT will have 8 years to raise the yield of the water network in a Bangalore neighborhood from 58% to 84%. The Bangalore Water Supply & Sewerage Board (BWSSB), the authority responsible for water and sanitation in the “Silicon Valley of India,” recently awarded the Group a contract to optimize the network and mitigate leaks. The city of Pimpri-Chinchwad, near Pune in Maharashtra, also selected SUEZ ENVIRONNEMENT to detect losses in the supply system. The Group will use a helium gas technology well-suited to India’s networks, which are characterized by sporadic operation and low pressure.

Present in India for the last 30 years, SUEZ ENVIRONNEMENT has developed its service activities there since the 2012 conclusion of a contract with New Delhi that focuses on improving the water supply to residents of the Malviya Nagar district. It is a major undertaking, with 100 kilometers of pipes to be replaced throughout the 200 kilometer network that supplies water to this district of 400,000 inhabitants. SUEZ ENVIRONNEMENT and SPML are also building 26 kilometers of extensions to ultimately connect 50,000 people in vulnerable neighborhoods to the water network. The contract also includes a major customer service improvement component, to ensure more responsiveness to customers and more efficient processing of requests and claims.

€8bn
is the amount India is planning to invest in water between 2013 and 2018 to support exponential demographic growth. Access to water is threatened for one out of two Indians by 2030.

€75m
over 12 years to increase the water network’s yield from 33% to 85%; in New Delhi, SUEZ ENVIRONNEMENT was selected to provide continuous water supply to the 400,000 inhabitants of the Malviya Nagar district.
Innovation, Sustainable Development, and Corporate Social Responsibility

The growth strategy of the SUEZ ENVIRONNEMENT Group honors its values and the commitments to its various stakeholders. These elements, which are embedded in the Group’s identity, are now differentiating factors in the implementation of its strategy. Its approach of listening and co-construction is now more than ever an important asset.

Sustainable development is in the Group’s DNA and is its core ambition.

Innovation, shared between the Group’s various entities and open to the outside world, is a factor of excellence.

The commitment of the Group’s employees is another. SUEZ ENVIRONNEMENT considers them to be a valuable resource, strives to give them opportunities to develop their skills, and capitalizes on their diversity.

The Group is also engaged in social actions to promote access to resources for everyone.

RESPONSIBILITY AND AMBITION
“With the 2012-2016 roadmap, we have set very ambitious goals for ourselves. Our aim is to remain the world leader in sustainable development. We want to be able to support our customers in their challenges and in their transition to a greener economy, to continue pursuing co-construction and dialogue with stakeholders, and especially to share these commitments with all employees of SUEZ ENVIRONNEMENT.”

Frédérique Raoult, Executive Vice-President in charge of Sustainable Development and Communications

Find out more
Read the Group’s sustainable development roadmap

Making sustainable development principles central to our activities

2016 Target Implementing SUEZ ENVIRONNEMENT’s strategy and its vision of green growth means integrating the principles of sustainable development into the way we conduct all our activities. In its second sustainable development roadmap for 2012-2016, the Group has formalized 3 priorities and 12 commitments. It is thus extending and strengthening the first roadmap for 2008-2012, incorporating more stringent requirements.

Priority 1 Innovate to grow our business and make our customers leaders of business and environmental performance. Our business activities are at the heart of the circular economy. We develop solutions for and with our customers that help them better manage the water and waste cycles and guide them towards greater environmental, economic, and social competitiveness. Our ambition is to ramp up momentum in innovation by involving our stakeholders in order to develop new solutions with high economic and environmental added value.

+ 2 metric tons of GHG emissions avoided for every metric ton emitted in the Waste Europe segment: this is one of the targets for 2016. In 2013, this ratio was 1.7.

2 metric tons of waste sent for recovery in Europe for every metric ton of waste sent to landfill by 2016. In 2013, this ratio was 1.42.

Recycling wastewater to protect water resources. The government of Jordan has awarded SUEZ ENVIRONNEMENT a 25-year contract to expand and operate its As Samra station, which treats wastewater from the Amman region. After its capacity is increased from 267,000 to 365,000 cubic meters, it will serve almost 35% of the country’s population, and more importantly, the treated water will be of sufficient quality to supply the agricultural sector. The plant, which will also be nearly energy independent, will provide 10% of the water resources for this very arid country. Wastewater recycling is another progress objective of SUEZ ENVIRONNEMENT’s sustainable development roadmap. In 2013, the Group opened the ultra-modern Medioluna treatment plant in the suburbs of Casablanca, Morocco, which recycles wastewater from 40,000 inhabitants for use in agricultural irrigation.

Priority 2 Develop our employees’ talents so that they become agents in the transformation of our business activities. SUEZ ENVIRONNEMENT is undergoing a profound change in its business activities and models. Our employees are driving the transition to a green economy: nearly 80,000 people around the world are mobilizing every day to innovate and to use their know-how to serve the Group’s customers. We acknowledge this and are therefore investing to develop their talents, promote equal opportunity, strengthen their commitment and the quality of life at work, and to ensure the safety of every one of them.

+ 18 hours of training and personal development per employee per year. In 2013, the average was 17.3 hours (compared with 16.8 hours in 2012). The percentage of employees who received training also rose by one point to 69.4%.

Employee safety: intensive outreach on the ten rules that save lives. In ten years, the number of workplace accidents resulting in medical leave has been reduced by one-third. The Group’s key indicators continue to improve. Between 2012 and 2013, the workplace accidents frequency rate* again fell, from 13.3 to 12.2, reflecting an improvement across all activities. Still, in 2013 SUEZ ENVIRONNEMENT launched a major action to further strengthen its safety culture by educating employees on the “ten rules that save lives.” The Group studied the serious accidents of the past decade to establish these simple golden rules. These were deployed through awareness efforts using the principle of “one hour, one risk, one team, one commitment.”

+ Reducing by at least 10% the severity rate** of workplace accidents is one of the Group’s targets for 2016. The ratio was 0.54 in 2013, against 0.66 in 2012 and 0.76 in 2011.

Priority 3 Make our businesses contributors to regional attractiveness and co-build solutions with our stakeholders. SUEZ ENVIRONNEMENT desires to act as a partner of local authorities, industries, and populations to build the solutions to many local issues together. The Group strives to promote access to water and sanitation services, as well as the socio-economic development of the regions. It believes that this partnership-based approach is essential to the solutions that it offers and executes. In all its activities, it seeks dialogue and the best-suited forms of governance.

+ Train over 80 workers and managers in water and sanitation services in developing countries (2016 target).

+ In Rillieux-la-Pape, a green investment is strengthening the local wood industry. Rillieux-la-Pape, a city in the Greater Lyon urban community, chose SUEZ ENVIRONNEMENT to upgrade its heating plant by transitioning from fuel oil to a biomass plant. The plant will enable it to save a little on costs (5%), and a lot on CO2 emissions (80%), while also benefiting the local wood industry. The new facility will create jobs (at least 10) and new markets through its annual consumption of 7,000 tons of wood energy. It will be funded by SITA and Cofely Services, a subsidiary of GDF SUEZ, with an investment from local authorities, Europe and ADEME (the French energy and environmental management agency). The Group is thus supporting this city’s commitment to sustainable development. Rillieux-la-Pape was founded in 1970 from the merger of a new town with a rural community, and it strives to combine rational urban planning with its agricultural heritage.

Find out more
Read the Group’s sustainable development roadmap

SUEZ ENVIRONNEMENT

www.suez-environnement.com

RESOURCES FOR ALL, RESOURCES FOREVER

Innovating in our businesses, growing our group

Making sustainable development principles central to our activities
Research and innovation are major strategic levers for SUEZ ENVIRONNEMENT. They are grounded in the Group’s global network of engineering and research centers, which work together to meet the technological challenges of the water and waste sectors. Advanced research places special emphasis on the Group’s strategic priorities of waste recovery, smart water, and industrial water. Through its engineering and research center in Shanghai and its active collaboration with the Shanghai Chemical Industrial Park, the Group has ramped up its research in the treatment of industrial water, among other things.

The sharing of know-how between its various entities is a priority for SUEZ ENVIRONNEMENT; it is the reason for the creation in 2013 of the Innovation and Industrial Performance Department (“DIP”), whose primary role will be to bring innovation even closer to the business in order to increase the Group’s responsiveness and give it a competitive edge. It will also support the industrialization of the various business activities to ensure that best practices and know-how are available and being implemented and shared within the Group.

To speed up innovation and to access a wider set of skills, SUEZ ENVIRONNEMENT has for years conducted an open innovation policy, as evidenced in the many and highly diverse partnerships with innovative start-ups, universities, public and private research centers, industrial concerns, and local authorities. Among other things, the Group organizes “technology tests” to evaluate, under industrial conditions, solutions submitted by start-ups or small or medium-sized companies. More than 40 such tests were performed in 2013. It is under this policy that the partnership with Finland’s ZenRobotics gave rise to the first robotic system for sorting waste (see Booklet 22).

The Group also solicits its customers’ involvement, in “idea contests” for example, in order to design innovative services that are in tune with regional needs. It also cooperates with industrial customers, particularly in waste recovery or in the treatment and recycling of complex effluents, thereby supporting them from the inception of their projects.

**€74 million**
That’s the amount invested by SUEZ ENVIRONNEMENT in research, technological development, and innovation in 2013.

**Over 400 researchers, experts, and technicians around the world are focused on the Group’s innovation challenges.**

**33 new patents**
were filed in 2013 by SUEZ ENVIRONNEMENT (against 31 in 2012).

**Blue Orange supports start-ups and innovative technologies.**
Since its inception, Blue Orange, the Group’s investment fund, has identified several hundred innovative start-ups. Its mission is to support young companies that are developing the most promising technologies in the water and waste sectors by investing in them and supporting them as industrial and commercial partners. In May 2013, Blue Orange and the seed fund DEMETER 3 joined forces to support COGEBIO, a young company in Lyon that has developed a solution for biomass recovery through gasification. Its product, GASCLEAN, produces a clean, synthetic gas that is directly recoverable. This technology will have direct applications in the field of energy from organic waste. In 2013, Blue Orange was also listed for the second time among the Top 100 Corporate Ventures (from among 1,100 companies worldwide) by the magazine Global Corporate Venturing.

**The Innovation Awards show the Group’s creative DNA.**
At SUEZ ENVIRONNEMENT, innovation mobilizes all entities of the Group. It is especially recognized and promoted through the annual Innovation Awards. Each business unit is invited to submit its most innovative projects in both the technical field and in the development of commercial offers or new services. Among the winners of a Grand Prize in 2013: modular desalination units designed by Degremont for Riyadh (see Booklet 2) and AquaCIS, the Enterprise Resource Planning and Integrated Customer Relationship Management software for the water sector, developed by Aqualogy.

**To find out more**
www.suez-environnement.com/inovation/open-innovation-strategy/
blue-orange-investing-new-technologies

Also watch the animated feature that presents building-in-house-collective-intelligence
Developing human resources locally

Nearly two-thirds of the Group’s activities are conducted outside of France. Consistent with the strong presence of its activities in its operating regions, SUEZ ENVIRONNEMENT is a local player everywhere. Its human resources policy will increasingly focus on developing local human resources, particularly when it comes to management.

Increasing cooperation

SUEZ ENVIRONNEMENT likes to expand the idea of “working together.” Convinced that the synergies at the Group level can make a difference, particularly by putting its know-how to work for its industrial customers, it promotes cooperation among its various entities, business units, and activities in order to offer comprehensive solutions to customers who need them. It is committed to promoting its diversity – a factor of creativity and differentiation.

Promoting the development of our employees

Our 80,000 employees are a resource that we strive to develop. SUEZ ENVIRONNEMENT is ramping up its training efforts and expanding internal mobility, including between business units to better exploit the many career development opportunities offered by the Group. The challenge is twofold: it involves both retaining employees and anticipating new needs in terms of job skills.

Cultivating diversity

SUEZ ENVIRONNEMENT knows that diversity means opportunity. This diversity, in the broadest sense, of origins, talents, and cultures, is a driver of performance for the company when it is carefully managed. In this decentralized Group, the diversity of the teams reflects the diversity of the population groups that we serve. It is therefore an asset that we have cultivated in order to make it a factor of differentiation.

Training to support the transformation of our activities

Training is an essential way that SUEZ ENVIRONNEMENT transfers knowledge and shares best practices. It is supported by the company’s social network and its Skills & Training community, as well as by a catalog of unique courses that are offered Group-wide. SUEZ ENVIRONNEMENT is recognized by its customers for the quality of its expertise. The way it transfers knowledge, including to customers, is a key factor in the success of its actions.

+ 1.38 million hours of training

were provided by the Group in 2013 (including through e-learning). 69.4% employees participated in a training course.

Second three-year commitment for the Diversity program

A priority of the Group’s human resources policy, diversity has received special focus since 2010 through the Diversity program for equal opportunity, social progress, and employee commitment. After an initial three-year phase that produced very encouraging results, SUEZ ENVIRONNEMENT renewed the Diversity program in 2013 for another three years, until 2016, with its commitments extended and reinforced on the same five priorities (see box below). In matters of social integration, the Group continues to support existing initiatives, such as the Maison pour Rebondir in Bordeaux, which has already helped hundreds of long-term unemployed to integrate the economic world by finding a job in the Group’s businesses or by creating their own micro-enterprise. The hiring and career development of women remains a priority, and is accompanied by an ambitious target: 30% of managerial positions filled by women in 2016 (compared with 27.8% in 2013 and 27% in 2012). Several entities have launched mentoring programs. As for employee commitment, it is now the subject of regular surveys in all of the Group’s business units.

+ Among the targets for Diversity in 2016: 30% women among managers and executives

4% work-study interns among the workforce

The five main priorities of the Diversity program:

— access to jobs and social integration;
— hiring and career development for women;
— hiring and career development for workers over 55;
— hiring and assistance for people with disabilities;
— employee commitment and quality of life at work.
Sarah Illenberger

In 2013, SUEZ ENVIRONNEMENT gave Sarah Illenberger a free hand in illustrating its 2013 Annual Report. With her stimulating and poetic installations, this visual artist applies her creative perspective to the major environmental and social challenges of the future.

Go behind the scenes at www.suez-environnement.com/group/profile/annual-report-2013

The SUEZ ENVIRONNEMENT Initiatives Fund engages in practical activities to promote access to water, sanitation, and waste management for vulnerable population groups in developing countries. The Fund is also actively involved in social integration, employment, and training for socially vulnerable population groups in France. It does so through financial assistance, but also by contributing technical and other skills. This is a key aspect of its actions, which rely on the Group’s transfer of know-how through sponsorships and skills volunteering.

The Fund attaches particular importance to the sustainability of the results achieved by the projects it supports. To ensure lasting success, it therefore seeks and recommends dialogue and co-construction of projects with solidarity organizations, beneficiaries, and other stakeholders on the ground. It extends its actions through its support for the professionalization of services: among other things, it helps to train workers in the water sector and promotes dialogue between such workers within the network.

Training water managers for emerging countries

Providing technical and managerial training for future leaders in water in developing countries: this is the challenge that SUEZ ENVIRONNEMENT, the SUEZ ENVIRONNEMENT Initiatives Fund, ParisTech, and two schools, AgroParisTech and Mines ParisTech, decided to meet in creating the ParisTech “SUEZ ENVIRONNEMENT – Water for All” Chair in 2008. Each year this Chair welcomes to its 18-month program two classes of 20 auditors each – one of French-speaking and the other of English-speaking students. It delivers an International Executive Master’s Degree certified by the Conférence des Grandes Ecoles. In addition to attending lectures on water management, auditors work on strategic action plans to transform their respective companies.

135 applications for funding were received by the Fund. After a rigorous short-listing process, 33 projects were studied by 64 evaluators from 15 entities of the SUEZ ENVIRONNEMENT Group. 14 projects were ultimately selected.

The SUEZ ENVIRONNEMENT Initiatives Fund

That’s the annual budget of the SUEZ ENVIRONNEMENT Initiatives Fund

80 auditors to date have enrolled in the “Opt” master’s degree program offered through the “Water for All” Chair

That’s the annual budget of the SUEZ ENVIRONNEMENT Initiatives Fund

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MAKING THE PLANET
SUSTAINABLE
IS THE BEST JOB
ON EARTH
Protecting the future of our resources is the challenge SUEZ ENVIRONNEMENT aims to meet by using a collaborative approach. Through the power of its innovation. Through the enthusiasm and daring of its employees. Through its culture of sharing and cooperation with all.

www.suez-environnement.com
SUEZ ENVIRONNEMENT

With activities across five continents, and 79,220 employees, SUEZ ENVIRONNEMENT supplies 92 million people with drinking water, and 65 million with sanitation services. It provides nearly 52 million people with waste collection services and recovers over 14 million tons of waste as secondary raw materials and energy.

To protect the future, we promote a more efficient use of our resources: optimize processes, create new alternatives for water resources, and transform today’s waste into tomorrow’s resources. In the growth model of the circular economy, SUEZ ENVIRONNEMENT is a leading player. We position ourselves as a partner for cities and industry to support them in making the most of their resources. Against this backdrop, there is a significant opportunity for the Group to develop.

In line with our commitment to sustainable development, SUEZ ENVIRONNEMENT continues to pursue growth internationally, we are innovating our business lines to bring greater added value to its clients and to the world that surrounds them, both today and for tomorrow.

Find the 2013 Annual Report at www.suez-environnement.com

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To follow SUEZ ENVIRONNEMENT on a daily basis, visit:
www.twitter.com/suezenv
www.youtube.com/user/SUEZenvironnement
www.emag.suez-environnement.com
What if we prevented flooding?

What if the right to water became a reality for all?

What if wastewater could generate power?

What if new technologies protected the future of our water resources?

What if industrial growth went hand in glove with protecting our water resources?

What if we recycled planes and cars?

What if we could drink the sea?

What if cars ran on plastics?
WHAT IF WE PRODUCED WATER IN THE DESERT?

Saudi Arabia, extending to over 2 million square kilometers of deserts and semi-arid regions: drinking water is a real challenge.

Implementation in just a few months of units producing drinking water from brackish water.

Until 2013, many households in Riyadh were supplied with water from a tanker-truck. It is true that there was a water table under the Saudi capital from which deep wells could draw hundreds of thousands of cubic meters of water each day. The only concern was that this water was brackish and spurted out at 65°C — not at all ideal for domestic consumption.

Between the contract being signed with Riyadh and the start of production of drinking water, we had 5 months instead of the customary 24 months required for this type of assignment. We were able to stand out from our competitors by taking account of the real issues faced by our customer, who wanted to combine this extremely fast commissioning with the future option of relocating the desalination modules.

Pierre Pauliac,
Director, Degrémont’s Middle East business unit

Degrémont and its US subsidiary Water and Power Technologies have pooled their complementary expertise and offered a solution that combines reverse osmosis, to filter the salt water, with a modular containerized production system.

Each module can generate 5,000 cubic meters of fresh water per day and comprises five containers: two for pre-treatment, two for reverse osmosis, and one for chemical treatments.

In order to adhere to their customer’s extremely ambitious plans, the Degrémont teams have coordinated the project internationally between the United States, Europe, the United Arab Emirates, and Saudi Arabia for the purpose of designing, manufacturing, transporting, and assembling these 33 modules.

The challenges
Of the water on this planet, only 0.7% is fresh water
Nine countries share 60% of it. The rest of the world must cope with drinking water which is already scarce and which is becoming increasingly so: in the next twenty years, 40% of the world’s population will live in regions where there is water stress or drought. When water reserves become insufficient, alternative resources must be found.

The solution
Fortunately, the 99.3% of the remaining water, whether it is seawater or brackish water, can be treated.

Degrémont is a world leader in water desalination and bases the scale of its solutions on the needs: whether it is building in Australia the largest plant in the southern hemisphere that uses seawater to supply 1 in every 3 of Melbourne’s residents, or assembling in record time an efficient and evolving solution for several sites around Riyadh, in Saudi Arabia.

40% of the world’s population will suffer water stress or drought in the next 20 years.

To find out more
www.suez-environnement.com

www.suez-environnement.com
Cooperation and pooling of expertise to eradicate a mountain of waste

Saïda, alias Sidon, the cradle of ancient Phoenicia. Its port, from which the very first merchants set sail. Its historic center, its shoreline, its castle… Its 1 million cubic meter mountain of trash. One km from the heart of the city, the largest rubbish dump in Lebanon was 50 meters high and 375 meters long a short while ago. A blot on the city, it also represented a threat to the health of the inhabitants and the marine environment, not to mention the local economy which is based on fishing. At the end of 2015, however, it will have disappeared, giving way to a public park and an ultra-modern waste treatment site.

Catching up with several decades of anarchic waste management is now possible (in the next 40 years, at the rate of around 200 metric tons abandoned daily). The Lebanese authorities have called on the UN Development Program to oversee rehabilitation of this site under a 25 million dollar service contract, and this mission was entrusted to the joint-venture formed by SUEZ ENVIRONNEMENT and a Lebanese company, Al-Jihad for Commerce and Contracting (JCC).

To reduce this huge pile of waste, SUEZ ENVIRONNEMENT has brought together its various areas of expertise. SITA CZ is providing its expertise in the area of soil remediation and aeration. SAFEGE is involved with its specialist skills in the area of providing sustainable development solutions. The project is also using the R&D of CIRSEE, the Group’s main research center, and NOSE, its odor management unit.

The contract provides for the construction of a plant to sort the excavated waste based on size and density. A new landfill site will be established right where the mountain of waste currently stands. The biogases and leachates, the “juices” produced by the runoff of rainwater through the landfill, will be closely controlled and recovered in a special ultramodern unit that is already in service. Like operational excellence, health and safety will be high priorities of the site. JCC and SUEZ ENVIRONNEMENT have also taken a stand to make sure their environmental approach is rooted in the local community. The site is bound to become a cultural location: it may finally be reconciled with the residents.

The solutions

It is never too late to adopt a sustainable approach when it comes to waste

In Saïda in Lebanon, getting everyone on board and making every individual responsible, by providing customized technological solutions, have shifted mountains… of trash and treated them responsibly. The city, relieved of a heavy environmental liability, has been able to go back to more efficient management.

The challenges

Our consumer society generates a lot of waste even though natural resources are limited

In the middle of the ocean or in the hearts of the cities, decades of anarchic waste management have left their traces, a real sword of Damocles.
Access to water for all is a fundamental human right. The goal is both to make water “physically accessible” to all and to offer commercial management tailored to low-income populations. In France, the water bill accounts on average for 0.8% of the household budget. For 2 million low-income households, however, it accounts for over 3%, which is the acceptability threshold set by the UN. In 2012, Dunkirk, where Lyonnaise des Eaux has been managing the public water and sanitation services since 2005, became the first city in France to adopt an “environmental social” pricing system that takes household income into account and also promotes lower consumption in an effort to protect the area’s particularly vulnerable water resource. The pricing is in fact progressive: the first volumes of water consumed, “essential water” for food and hygiene, cost less than “useful water” (for example, water for washing clothes and watering the garden) and, of course, “comfort water,” such as water for filling swimming pools. A “water check” system gives an extra boost to the least well-off households or to large families.

AGBAR in Spain and Latin America is making similar efforts to implement commercial management tailored to low-income or marginalized groups. It has created a mediation system, for example, in the various countries where it operates its businesses so that it can resolve the problems of outstanding accounts out of court. It is also developing solutions specially tailored to the emerging countries. In Colombia, Aguas de Cartagena, its subsidiary in a public-private partnership with the city of Cartagena de Indias, is promoting the policy of maintaining water services for users who cannot their bills, using a system of rates adjustment, deferred payment, and billing reductions. In Chile, Aguas Andinas has implemented “Cuenta Amiga” (bill pal), a program to support households with limited resources that have difficulty making their payments. Sessions are held where views can be exchanged with the aim of finding a global solution to the problem of each district concerned. The program also includes a technical component for improving the infrastructures to optimize the way the water networks operate. Where there are outstanding accounts, Aguas Andinas assists households in rescheduling their payments, and in certain cases ensures they are provided with the water subsidies distributed by the Chilean government.

The solutions
For SUEZ ENVIRONNEMENT and its subsidiaries, access to water for all is a fundamental human right. The Group makes this a priority and gets involved by implementing programs that facilitate access to water for deprived households.

Social pricing is particularly effective in reducing the relative weight of the water bill in users’ budgets. Mediation can also contribute to preventing water service from being cut off and to preventing increased insecurity for the most vulnerable households.

The challenges
Access to water and sanitation has been recognized by the UN since 2010 as a fundamental human right. The existence of appropriate infrastructures is not always enough to guarantee access: water comes at a cost, the cost of the process needed to convert it to drinking water and transport it, which is borne both by the municipality and by the users. Even so, sometimes the bill is still too much for some people.
WHAT IF CARS RAN ON PLASTICS?

Pioneering processes for giving plastics a new lease on life.

Seeing the condition in which agricultural tarps and films end up after being used for several years, riddled with holes and full of earth, it is hard to imagine them finding a new use as trash collection bags for the citizens of Rennes, Lyon, or Paris.

However, this is just the transformation that has been undertaken since 2012 by the new production line of SOPAVE, a 3.5 million euro investment. The Aveyron-based subsidiary of SUEZ ENVIRONNEMENT is the only company in France to handle the collection, processing, and complex transformation of contaminated polyethylene film waste into trash collection bags. Nearly ten steps are involved, from shredding to washing to extrusion, between collection of the waste and production of a fully recycled bag. SOPAVE will supply 100% of the bags for the city of Paris, over a three-year period.

While some plastics are very easy to recycle, others are hard, or even impossible, to recover. SUEZ ENVIRONNEMENT aims to manufacture diesel fuel from these more complex plastics. In 2010, the Group and its investment fund Blue Orange signed an agreement with Cynar, an Irish start-up which has developed a revolutionary process to transform a wide range of plastic waste types into liquid fuel. Plastics from packaging, bottles, and supermarket bags or PVC pipes are derived from hydrocarbons, and this technology ensures that they revert to them. First they are ground up and reduced to confetti, and then they undergo liquefaction followed by pyrolysis at more than 400 degrees to break the polymers. Then comes distillation to sort the various molecules obtained. The result of this reverse refining is a liquid fuel that can be used to power a car. In Avonmouth, in the suburbs of Bristol, SITA UK and Cynar will in 2014 open the first of ten plants scheduled to operate this technology. It will treat 6,000 metric tons of plastics annually and will generate over 4 million liters of diesel.

The challenges

Each year the world generates 150 million metric tons of plastics. In France, 20 times more is used now than was used 50 years ago. But when they are stored, or worse, discharged into the natural environment, plastics take centuries to degrade. As for the hydrocarbon resources that are used to produce the plastics, they are now no longer inexhaustible. Isn’t it conceivable that all these plastics could have a longer lifecycle thanks to recycling and energy recovery?

The solutions

The situation has changed and progressed. Nowadays, there is ten times more recycling of plastics than there was ten years ago. Certain materials such as PET or PEHD from bottles, once they have been duly sorted, are used to produce new packaging or fleeces, but other plastics are still unused and are put into landfills. SUEZ ENVIRONNEMENT is developing innovative processes to give them a new lease on life too.

150M

metric tons of plastic materials are generated annually worldwide. Once stored, plastics take several centuries to degrade. The challenge is to recycle them.
Responses to all industrial issues relating to water treatment.

In Chengdu, at the heart of China’s growth, the refinery owned by oil giant PetroChina has since 2013 been at the cutting-edge of wastewater treatment; it is now achieving a 70% recycling rate.

Reusing water is a clearly stated priority of China, which is struggling to preserve its economic momentum and protect its environment at the same time—one third of its waterways are extremely polluted. The wastewater plant built by Degrémont Industry for PetroChina is a real international showcase for all the most cutting-edge technologies: ultrafiltration, reverse osmosis, etc., as well as ozonation, through Oxyblue™, a solution that is both much more effective than the traditional processes, and highly competitive in economic terms. The organic matter from the wastewater is brought into contact with the ozone, then the wastewater is biologically treated using biofiltration. Oil and natural gas are two of the strategic sectors on which SUEZ ENVIRONNEMENT is very specifically focusing its efforts in the industrial water area, by designing solutions customized to the specific needs of companies. Degrémont Industry, for example, has developed for oil production a membrane process for desulfating the injection water (see Booklet 1, p. 33). The Group’s services also rely on Actimar, the Safege subsidiary specializing in oceanography, which publishes forecasts of ocean currents and wave levels that are very useful offshore.

In the world’s largest copper mine, in El Teniente, operated by CODELCO, the state-owned giant in Chile, SUEZ ENVIRONNEMENT had another achievement in 2005 by increasing the waste water treatment capacity from 1,500 to 2,500 liters per second. This boost was needed to adapt the wastewater plant to new, very stringent regulations concerning the pH of wastewater and particularly its concentration of molybdenum, a co-product of copper. Degrémont Industry enabled CODELCO to meet this challenge thanks to its highly efficient Densadeg technology, and SUEZ ENVIRONNEMENT has in this way positioned itself well to continue to support the mining giant, which in 2013 announced a 3 billion dollar environmental investment plan.

Heavy industries are not the only ones concerned by these issues relating to the treatment of industrial wastewater. The semi-conductor sector, for instance, presents a particularly complex challenge, with its highly polluting effluents such as tetramethylammonium hydroxide. To limit its impact, Degrémont Industry has designed MicroGREEN, a pilot program for treating wastewater that is an unprecedented combination of biological steps and ozonation. Already used by American manufacturing companies, this process was awarded a prize at the Group’s 2013 Innovation Trophies ceremony.

The challenges

Manufacturing companies all over the world are subject to increasingly stringent environmental regulations, with water and waste being major challenges.

Both the emerging countries and the industrialized ones stress that pollution must no longer be the price paid for economic growth and are giving more and more priority to domestic uses of water.

The solutions

SUEZ ENVIRONNEMENT is positioned as a preferred partner of industrial companies, particularly in sectors which both are major water consumers and are strategic for the economy of growth countries, such as oil or mining.

To satisfy these very demanding customers, it provides them with the most efficient and innovative solutions the market has to offer.
WHAT IF WE MANAGED TO RECYCLE EVERYTHING?

70-90%

This is the improvement achieved by the robot produced by Finland’s ZenRobotics, which with great meticulousness sorts construction and demolition waste.

Extremely unusual innovations promising a wealth of possibilities for construction.

It is Finnish, it is called ZRR, ZenRobotics Recycles, and it sorts construction and demolition waste, a job considered too hazardous for a human to do.

It’s no problem for him, though, since ZRR is a robot. Created by the company ZenRobotics, ZRR was adopted by SITA following engineering trials conducted jointly since 2011, during which it proved it could increase the rate of waste sorted from 70% to 90%. SUEZ ENVIRONNEMENT and ZenRobotics have signed a framework agreement to deploy the robot globally.

In the Netherlands, SITA has tackled the issue of the 20% of paint on average that is left at the bottom of the pot after the work has been completed. Of the 10 million kilos of residue destined each year for the landfill, one third could be recycled. In 2012, SITA and VVVF, the Dutch Federation of Painting and Printing sectors, decided to take action, starting with water-based wall paints. SITA collects the old pots provided by individuals, and purifies, filters, and tests the materials. The quality of the result is so good that the Dutch Ministry of Infrastructures and the Environment has authorized its sale. The manufacturer Ursa Paint put the first pot of recycled paint on the market in 2013.

In France, the considerable quantities of river sediment produced by the Nord-Pas-de-Calais region are going to be used for something. SITA has, along with the environmental engineering firm Neo-Eco Recycling, and the Douai Mining Engineering School, developed the first concrete fully made from recycled materials. Known as C’Urban (Concrete Urban), it is also composed of foundry sand, deconstruction rubble and, of course, cement, binding material, and water. Its unprecedented formula ensures it has the same properties as “classic” concrete. This is a fine example of co-construction and has already found initial applications: in early 2014, SITA signed a partnership with the manufacturing company Doublet which is going to use the concrete in a line of urban furniture. C’Urban is already going to be used to make Octave, a modular bollard for parking bicycles.

The solutions SUEZ ENVIRONNEMENT provides each sector with tailored technology and joins with partners from all walks of life to think up groundbreaking responses.

The challenges

Construction activities generate a huge volume of waste
This waste offers interesting recycling possibilities but processing it is complex since it is very heterogeneous and hard to sort; inert waste can be mixed with other, hazardous, waste – asbestos, of course, but more simply tar, paint, solvents, sharp objects, etc.

What if we managed to reCyCle everything?

ZenRobotics, a cutting-edge tool for optimizing the sorting of construction waste.

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As a major local player, the Group feels involved in the region’s development. It has also made a commitment to promote diversity in its teams so they reflect the populations with which they come in contact in their work. This means in particular giving opportunities to people who are far removed from finding jobs, the long-term unemployed, recipients of supplementary welfare allowance, or young people without any qualifications. The goal of the “Maison pour Reboundir,” a pilot organization created in Bordeaux by the Group in 2012 and financed by the SUEZ ENVIRONNEMENT Initiatives Fund, is to support these individuals in trying to find long-term jobs or help them create their own businesses. Through its initiatives, the “Maison pour Reboundir” contributes to the social and economic momentum of the regions. To achieve this, it gets two worlds to collaborate: the world of enterprise, and the world of social welfare and employment players. SUEZ ENVIRONNEMENT’s goal is not to compete with social integration organizations, but to supplement what they are doing. These organizations are, incidentally, asked to give their opinions and invited to visit the Group’s companies in the region so as to find out more about their businesses and thus be better able to spot individuals who might do those particular jobs. SUEZ ENVIRONNEMENT employees are deployed to provide their support as mentors, sponsors, or even as tutors. In 2013, the “Maison pour Reboundir” assisted 86 individuals in gaining long-term jobs, including 30 jobs of the future. Some had launched or were in the course of founding their own businesses; this is the second part of the “Maison pour Reboundir” initiative which offers two business start-up assistance programs. The first one, “j’entreprends,” is for those seeking long-term employment, who are driving the project but who need extra help to get started. The second path, “les CréAtrices,” is for women originally from abroad who are in difficult situations. It is conducted in partnership with the association Promofemmes and offers a nine-month supervision and training program which helps “créAtrices” develop their plans and become familiar with the world of enterprise. The Group’s goal is to open other additional “Maisons pour Reboundir” in other regions.
Environmentally-friendly treatment of sauerkraut liquid turns pollution into renewable energy.
The elected officials in the 11 local councils in the Terres de Sainte-Odile were right about wanting to find a global solution for all the wastewater in their region: the wastewater from their 27,000 residents and also from the local industry which produces 70% of the nation’s sauerkraut. The liquid derived from the sauerkraut, which is highly acidic and briny, must be treated in a special system. The liquid is produced in high quantity in the region (the equivalent of the wastewater of 175,000 inhabitants) and is seasonal, between August and February. SUEZ ENVIRONNEMENT suggested a way to make the liquid more eco-friendly by causing it to generate biogas which can be recycled as energy. The Ehn Basin SIVOM [Multipurpose Intercommunal Association] was thus able to open up its new wastewater plant up to effluent from sauerkraut producers, instead of continuing to send it to Strasbourg, thus turning its waste into renewable energy.

Two treatment facilities coexist at the plant, which was inaugurated in 2012. One, the traditional one, handles the region’s wastewater. The other, less classic, facility exploits the extremely interesting potential of sauerkraut liquid in 25-meter high methanization towers. Bacteria degrade the organic matter, producing biogas, 85% of which is made up of pure methane – a very good score. In four hours, 90% of the liquid is thus consumed by the bacteria. The rest then follows the usual route taken by the municipalities’ wastewater. The “classic” purification sludge is digested to produce biogas as well. The various methanization gases from the two facilities are then combined, treated, and used to generate both electricity and heat for the digestor and the buildings. The environmental performance of the facility is outstanding: the quality of the discharged water is higher than the mandated regulatory standards. Its energy performance is excellent as well: the plant produces the equivalent of the energy consumed by 1,500 people, which it can resell to the power distributor. It also manages discharges from wine-growers. The system is also used, again in Alsace, to treat brewery effluent: Lyonnaise des Eaux handles that for Kronenbourg, in Obernai. /
WHAT IF WE PREVENTED FLOODING?

Intelligence and technology to channel rainwater, even extreme rain

The excessive rainfalls that cause wastewater treatment systems to overflow are a major factor in pollution. By coupling the way information is processed with the most sophisticated water management know-how, SUEZ ENVIRONNEMENT can offer its customers tools to help their networks deal with the vagaries of the climate.

The challenges
Rain is responsible for 50% of the pollution of the rivers and beaches in urban areas. Water does not seep into the soil in a city. It runs off and carries with it all sorts of residue: zinc, fuel, waste oil, and heavy metals, adding to the industrial smoke, exhaust gases, etc. This charged cocktail arrives at the city’s water treatment network. But when the rainstorms are particularly violent, the network can overflow. In November 2012, the famous Hurricane Sandy, for example, saturated the New York network and caused 40 billion cubic meters of wastewater to overflow into the streets. What can be done to protect urban and surrounding areas, improve the efficiency of infrastructures, inform residents in the event of an emergency, and prevent crises from occurring?

The solutions
On a smaller scale, what happened in New York in 2012 could have happened in Bordeaux in the summer of 2013, when heavy rains beat down on the city. But the urban municipality of Bordeaux, part of whose territory is below the level of the highest waters of the Garonne, had since 1992 entrusted Lyonnaise des Eaux, a SUEZ ENVIRONNEMENT subsidiary, with the task of handling its rainwater. An Influx solution was developed. Managed by a remote control, the rainwater storage facilities, including the 149 catchment basins or even the major network of pipes (3,900 km of pipes), from 300 mm to 4,500 mm in diameter, collect the run-off water and discharge it into the natural environment (the Garonne, for example).

In addition to combating flooding, the solution that is implemented also protects the quality of the waters of the Garonne by limiting overflows in the area where water enters, as a result of optimized storage of wastewater during rainy periods in the existing collectors and catchment basins. In 2013, the urban municipality of Bordeaux was thus able to save on constructing additional storage reservoirs (20 million euros) by achieving a 30% reduction in the number of discharges in times of rainfall.

Over its long experience, SUEZ ENVIRONNEMENT has developed a rounded range of services to combat flooding. To improve treatment plants so that they can better handle the changed load associated with extreme weather, Degrémont has developed DENSADEG, a very robust and efficient sedimentation tank, which is also much more compact than a traditional storage basin. Safege has signed a partnership with Météo France: coupled with modeling the grid, the weather forecasts project the impact of the bad weather on a city’s grid. During a crisis, critical locations can even issue email or SMS alerts. By combining all of its various areas of expertise, SUEZ ENVIRONNEMENT offers its customers customized solutions. For example, in Marseilles, it will once again be implementing INFLUX and a number of high-tech innovations to equip the city with an ultra-modern management center, le Phéare, which will keep a watch on the city’s waters and bay area.
WHAT IF WE RECYCLED PLANES AND CARS?

In Tarbes, decommissioned planes are dismantled. Most of their parts and materials are given a new lease on life.

Nothing is created, nothing is lost, everything is transformed.

When PSA announces that it intends to recycle 95% of its waste, it’s not just talking about its waste paper baskets. The automotive manufacturing industry has for a long time now adopted a very advanced recycling and eco-design strategy for its vehicles. SITA, which has been supporting PSA for over 10 years and has become one of its major suppliers, has just been given a 3 year commission to handle the production-line scraps from its plant in Vigo, Spain. This 45 million euro contract is for the very considerable volumes of steel and aluminum which do not ultimately end up in a C4 Picasso or a Berlingo. SITA, a true partner, will be responsible for collecting these metals and selling them to Spanish steel manufacturers and foundries. SITA also manages the chutes de production de PSA at 3 other sites in France and Slovakia.

For a more circular economy, SITA can also process decommissioned vehicles, boats or planes and give a second wind to most of their parts and materials.

In Tarbes, in the Aerospace Valley, SUEZ ENVIRONNEMENT participates alongside Airbus and Snecma Services in another sophisticated recycling project: TARMAC Aerosave, which disassembles and recycles planes at the end of their useful life. Fokker, Airbus, Boeing, and even Falcon, all types of plane, can end their days there as spare parts. The equipment, which accounts for most of the value of a plane, is unloaded, checked, and sold to find a new life in other devices, in compliance with very stringent safety and traceability standards. All that remains is the shell of the plane, ready to be cut up. The metals are all identified, a major step in being able to optimize their recycling, and then sorted. TARMAC Aerosave successfully recycles as much as 90% of a plane’s shell. Following its initial successes, the joint venture has just opened a new center in Spain, whose capacity is ten times greater than its first site. It will be able to house 200 planes and dismantle 30 to 40 each year.

The solutions
The first bit of good news: there exist what is known as secondary raw materials (recycled)

The second bit of good news: there are a lot of them among the production-line scraps from a car plant or in the shell of a car that is at the end of its useful life. Recycling allows manufacturing companies to obtain some of their supply or implement substantial savings by reselling waste that has become a source of value, and all the while protecting nature from the pollution that is associated with certain waste.
Maximize the use of biogas, the energy wealth produced by biowaste.

A wastewater plant can cover most of its energy needs from the sludge it extracts from the wastewater, using methanization. The sludge is digested by microorganisms in fermenting reactors that have no oxygen in them. The result of this decomposition is biogas: a mixture of methane, a high, energy potential hydrocarbon, and carbon dioxide. The As Samra treatment plant in Jordan, designed and operated by Degrémont, is 95% energy-independent, largely due to the biogas it produces. The Aqualyôn-la Feyssine plant in Lyon, built in 2011 to serve the equivalent of 300,000 inhabitants, meets 75% of its energy consumption just from the biogas that supplies its furnaces. The City of Lyon has called on SUEZ ENVIRONNEMENT and its Conseil Biogaz unit, which is dedicated to supporting customers who wish to set up or optimize a biogas facility.

The Group has, in particular, developed sophisticated characterization techniques which are key to making the right choice about which processes are the most appropriate. Methanization, which is extremely interesting for the “sludge segment,” also enables biogas to be extracted from solid organic waste, particularly waste that is discharged by the agrifood industries and the farming segment, a high growth market for the Group. Through its subsidiary SITA Bioénergies, SUEZ ENVIRONNEMENT produces 31% of the biogas in France.

Once it is generated, biogas can be used to produce heat or power. It can also be reinjected into the natural gas network. This is the aim, by 2014, of the Biovalsan project conducted by SUEZ ENVIRONNEMENT in Strasbourg in collaboration with Réseau GDS, the local gas distribution operator. Biovalsan will manufacture biomethane from the wastewater discharged by the La Wantzenau wastewater plant, the fourth largest in France, run by SUEZ ENVIRONNEMENT. The biogas will undergo a series of transforming processes to get rid of its impurities and CO₂ before being introduced into the network and consumed locally, at the rate of 1.6 million cubic meters annually, i.e., what is needed annually for 5,000 low energy consumption housing units. The latest possible outlet for biogas is the production of fuel, liquefied biomethane. An innovative cryogenic process developed by Degrémont Services and EReEs, a young innovative company, is being trialed in 2014 in the Paris region.

In Jordan, the As Samra wastewater plant is 95% energy-independent due to the biogas it produces.
WHAT IF WE STOPPED WASTING FOOD?

1T
of biowaste can be used to produce 160 m³ of biogas, or the equivalent of 160 liters of gasoline.

Mechanical processing for optimal sorting of biowaste at source.

Leftover food from municipalities and restaurants, supermarket food that is past its sell-by date, and other agrifood waste can still be used to benefit society. This is clearly the angle taken by Sweden, which aims to increase the proportion of its recycled organic waste to 40% by 2015, up from the current 20%. The European champion of recycling only stores 1% of its waste (as opposed to 38% for the European average).

In France, the Grenelle II law has mandated sorting at the source and recovery of organic waste for major producers: retail, industrial catering, and the agrifood industry. If it is not sorted at the source, the biowaste is mixed with other non-recyclable waste and is ultimately treated by incineration or storage. Bio-recovery means it can follow a more natural cycle and leads in passing to reduced use of chemical potash or phosphorous fertilizers, thanks to the certified compost produced. However, to properly treat this precious organic waste, there was still the problem of the packaging to be considered since that cannot biodegrade.

In the emerging Swedish market, SITA is for the moment the only company to have provided a simple and efficient solution for collecting at the source and treating agrifood waste, both animals and plant waste, directly at the manufacturing sites. Known as Bio Simplex, this innovation consists of pressing the waste into a watertight compartment. The liquid, organic, phase, is then trucked to a biotreatment unit that will produce methane. The first customer for the prototype, a grocery store in the south of France, was attracted by its simplicity... and the complete absence of any unpleasant odor. The first installations were sold in the summer of 2013. SITA is also able to “bio-unpackage” the organic waste on an industrial scale. Its solution, already implemented in France at several sites, was deployed in 2013 in a new installation in Gironde, in Saint-Selve, where it recovers 100% of the 7,000 metric tons of biowaste it treats annually. It grinds the waste up and separates it from its packaging using a turbo-separator, producing a homogeneous organic substrate that is ideal for the production of certified compost, and is highly methanogenic.

90T
of food annually is discarded by the major food distribution units in Sweden. Only 10 to 20% of this waste goes through a bio-recovery process. This waste could be used to produce the equivalent of 7,000 liters of gasoline.

The challenges
When organic waste degrades, it produces not only compost, which can enrich farmland, but also biogas. Methane can be used to produce electricity and even to run vehicles, provided the waste is properly sorted and separated from its packaging.

The solutions
In Sweden and France, SUEZ ENVIRONNEMENT has developed “bio-unpackaging” and biomechanical sorting tools which separate organic waste from its packaging, facilitating simplified collection at the source and efficient industrial processing.

In Sweden, an innovative solution has been developed to separate the organic waste from its packaging and optimize recovery.
WHAT IF “SMART” CITIES WERE EVERYONE’S RESPONSIBILITY?

Cit’Ease connects the city’s data to provide more detailed and more interactive control. To optimize management of its resources, a city needs information that is relevant and is intelligently shared among all stakeholders. SUEZ ENVIRONNEMENT and GDF SUEZ have worked on this idea using both their many years of experience in providing services to municipalities and the data processing potential afforded by new technologies. The result is a comprehensive control panel, Cit’Ease, which can collect, aggregate, and organize all a region’s data; whether it relates to water, waste, and energy; a region’s development; or the management of flows, risks, and social data.

The municipality thus possesses a powerful tool whose real-time information flows allow it to control all its services responsively and better plan the actions it will take. Cit’Ease was designed as an entertaining and adaptable ergonomic tool due to the way it is organized: each municipality can add in the applications that will be most useful to it, including applications that are not part of the package provided by SUEZ ENVIRONNEMENT and GDF SUEZ.

This flexible platform is also a multi-media tool that can be viewed using all types of devices, including computers, tablets, and televisions. Only in this way can it be accessed by a wider public. The municipality chooses to allow citizens to log on to its Cit’Ease via a dedicated interface. This enables it to both inform them in real time, and canvas their opinions and reactions or get them to actively participate. The tool even offers innovative functionalities to educate the public about certain topics by using games, such as inter-district challenges.

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Combating micropollutants
In the early summer of 2011, ammonium perchlorate pollution was detected in the water resources of the urban municipality of Bordeaux. This was unprecedented since this is a substance that can be hazardous to human health but is still very rare. In three days, SUEZ ENVIRONNEMENT’s laboratory CIRSEE was able to implement an efficient analytical method which halted the crisis in its tracks, and allowed the people of Bordeaux to continue to be supplied with safe drinking water. The term “micropollutants” refers to hundreds of thousands of molecules from various sources: industrial products, softening agents, detergents, hydrocarbons, pesticides, cosmetics, and even drugs can be found judging by traces found in the water. According to what is now well-established scientific consensus, the issue with micropollutants is generally more environmental than health-related.

To gain a better understanding of them, SUEZ ENVIRONNEMENT has in the past ten years participated in over 25 national and international dedicated research programs, particularly AMPERES which rated the efficiency of the wastewater treatment plants. These stop more than 70% of the vast majority (85%) of what have been identified as priority substances. One future way forward is to equip the purification plants with treatment options that were previously used specifically for the production of drinking water, such as ozonation, which uses ozone, a gas that is very unstable and therefore highly reactive, to deactivate pesticides and pathogenic organisms. This solution was used for the first time in France at the Bouillides wastewater plant, built by Degrémont and inaugurated in 2013 at Sophia Antipolis. Membrane technologies, another of Degrémont’s recognized areas of expertise, can also be used to treat micropollutants. Ultrafiltration is already very effective against pesticides and other organic compounds. Nanofiltration only leaves the dissolved salts in the water. Less systematic but also less energy-intensive, the “zone libellule (dragonfly area)” created in 2009 in Languedoc Roussillon builds on nature’s own filtration and purification capacities: water circulates in the area through a humid buffer area full of vegetation. In July 2011, a specially designed initiative showed that the flow of substances discharged onto the surface of the environment was reduced by more than 80%, and biodiversity was protected. Launched in 2013, the aim of the ZHART project (which stands for Zone Humide ARTificielle [ARTificial Humid Zone]) is to industrialize these vegetation waste areas exiting purification plants.

The challenges
In the last few years, capacities for analyzing water have increased considerably (x 1,000 in ten years), revealing “micropollutants” that already existed but were previously undetectable in very limited quantities, not all are hazardous to humans, but what are the long-term consequences for the environment?

The solutions
SUEZ ENVIRONNEMENT has for the last ten years been conducting an active policy of research and development with the aim of better understanding micropollutants and strengthening its treatment solutions as a result. With its customers, the Group has already successfully implemented innovative processes, which use ozone, ultrafiltration membranes, etc., or quite simply nature itself.
Sarah Illenberger
In 2013, SUEZ ENVIRONNEMENT gave Sarah Illenberger a free hand in illustrating its 2013 Annual Report. With her stimulating and poetic installations, this visual artist applies her creative perspective to the major environmental and social challenges of the future.
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MAKING THE PLANET SUSTAINABLE IS THE BEST JOB ON EARTH