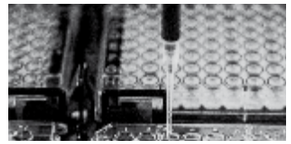
“IT’S A SET OF CAUSE AND EFFECT THAT **IMPROVES THE ENTIRE SYSTEM**”

INTEGRATED ANNUAL REPORT **2017**

Séché environnement

Séché global solutions

SUMMARY



EDITORIAL

As a company that recycles waste, the circular economy is at the very heart of Séché Environnement's business. Environmental consciousness is the corollary of exercising a profession with respect for humanity and nature.

Founded in 1985, the Group began incorporating the concept of sustainable development into its corporate policy from its inception and has supported all the strides made since the 1992 Earth Summit in Rio helped by regulatory changes which supported these initiatives.

Listening to our stakeholders is another key factor of the Group's development, in harmony not only with its employees, neighbors and customers but with the volunteer, educational and academic sectors.

From the viewpoint of some of its stakeholders, the Group's activities may be seen as sensitive. The policy of incorporating biodiversity into our business fosters social acceptance of our facilities. It improves management in the field (maintaining a nursery of endemic plant species combined with safeguarding the character of the landscape) and helps create a true corporate culture.

It is with this goal in mind that Séché Environnement, with its 2,500 employees worldwide, recycles whatever can be recycled into raw materials or failing that, recovers the energy they contain. In 2017, the Group was 219% energy self-sufficient, a level high enough to satisfy the electric power needs (excluding heating and hot water) of one million people.

These activities linked to waste recovery are constantly evolving and require innovation and investment in technologies that are becoming increasingly sophisticated.

Above all, it should not be forgotten that a fraction of this waste may be relatively hazardous and must be controlled and monitored, which is just another aspect of the Group's work. We decontaminate and process some of the most hazardous waste in existence and we recover sought-after metals or molecules such as bromine.

"An imaginary and an impractical scheme for building a society which, in the eyes of person who builds it, represents an ideal". That's the definition of utopia.

The circular economy resembles a utopia in the sense that it involves rebuilding an ideal company organization (or something like it) based on modified behaviors and rethinking of the organization's activities, for the common good of humanity, preserving resources for the future.

Waste is one of the major factors, after frugality, necessary for consumption. Waste is in the spotlight, it is part of the solution: it allows the loop to be closed.

With this in mind, today more than ever before, we are building our future business so that it may contribute to making the planet a pleasant environment in which to live. This is the task for our employees, in France and worldwide.

This entire adventure would not have been possible without all the men and women who contribute to it daily.

I would like to publicly acknowledge and thank them here.

Joël Séché
Chairman and Chief Executive Officer

PUTTING **WASTE BACK** ON TRACK

Solid Recovered Fuel (SRF) energy recovery unit

"RECOVER WASTE AND TRANSFORM THEM IN MATERIALS AND ENERGY"

- **The circular economy** is defined as a system for production, trade and consumption designed and organized to **minimize the draining of resources** (fossil fuels, raw materials, water, land, habitat) and polluting emissions, sources of negative environmental and health impacts, both locally and worldwide.
- It is reflected in **ecodesign**, new business models (product-service systems and industrial ecology) and by the **recovery of waste and energy.**

AN ENVIRONMENT **FAVORABLE** TO THE CIRCULAR **ECONOMY**

AN ASPIRATION THAT IS BOTH NATIONAL AND EUROPEAN

The transition to a circular economy is at the heart of the initiative involving the efficient use of resources established in connection with the Europe 2020 strategy for smart, sustainable and inclusive growth.

The "Circular Economy Package" drawn up by the European Commission in 2017 establishes ambitious recycling targets, such as the recycling 60% of municipal waste by 2025 and 70% by 2030 or, targets of 65% and 70% for bio-waste by the same deadlines.

In France, the "Act Respecting Energy Transition for Green Growth" (2015) set a few national targets, which were picked up in early 2018 in discussions having as their objective the drafting a "Circular Economy Roadmap", which will lay down the practical arrangements for its implementation.

The main measures are expected to be restated in the draft 2019 Budget Act or, for a few very technical measures, become specific pieces of legislation, perhaps even being addressed in additional articles on the enactment of the Circular Economy Package into French law.

> "With the Circular Economy Package, Europe is targeting recycling, not waste."

SÉCHÉ ENVIRONNEMENT'S RESPONSE

Multi-skilling and high technical sophistication

Séché Environnement is one of the leading players in the recovery and treatment of all types of waste in France, from both industry and local communities.




From the simplest waste...

The bulk of non-hazardous waste is easy to collect and recycle as-is, such as secondary raw materials (wood, paper/cardboard, etc.) requiring more or less complex sorting know-how and involving logistical operations for delivery to the brokered secondary raw materials market. The Group is a provider of services to local authorities and producer responsibility organizations such as Citeo, Eco-Mobilier, and Valdelia and recycles waste sorting rejects from which raw materials cannot be reclaimed into solid recovered fuel (SRF).

At the national level, the implemented recovery techniques help to reduce the use of landfill to 17.3 metric tons for every 75 metric tons produced.

...to the most complex

The recovery of usable materials goes on all around us, even in connection with the treatment of hazardous waste, but the major characteristic of these secondary raw materials is that they can be extracted by using predominantly sophisticated chemical treatment techniques to separate, concentrate and purify the scarce materials they contain (solvents, hydroxide sludges, etc.)

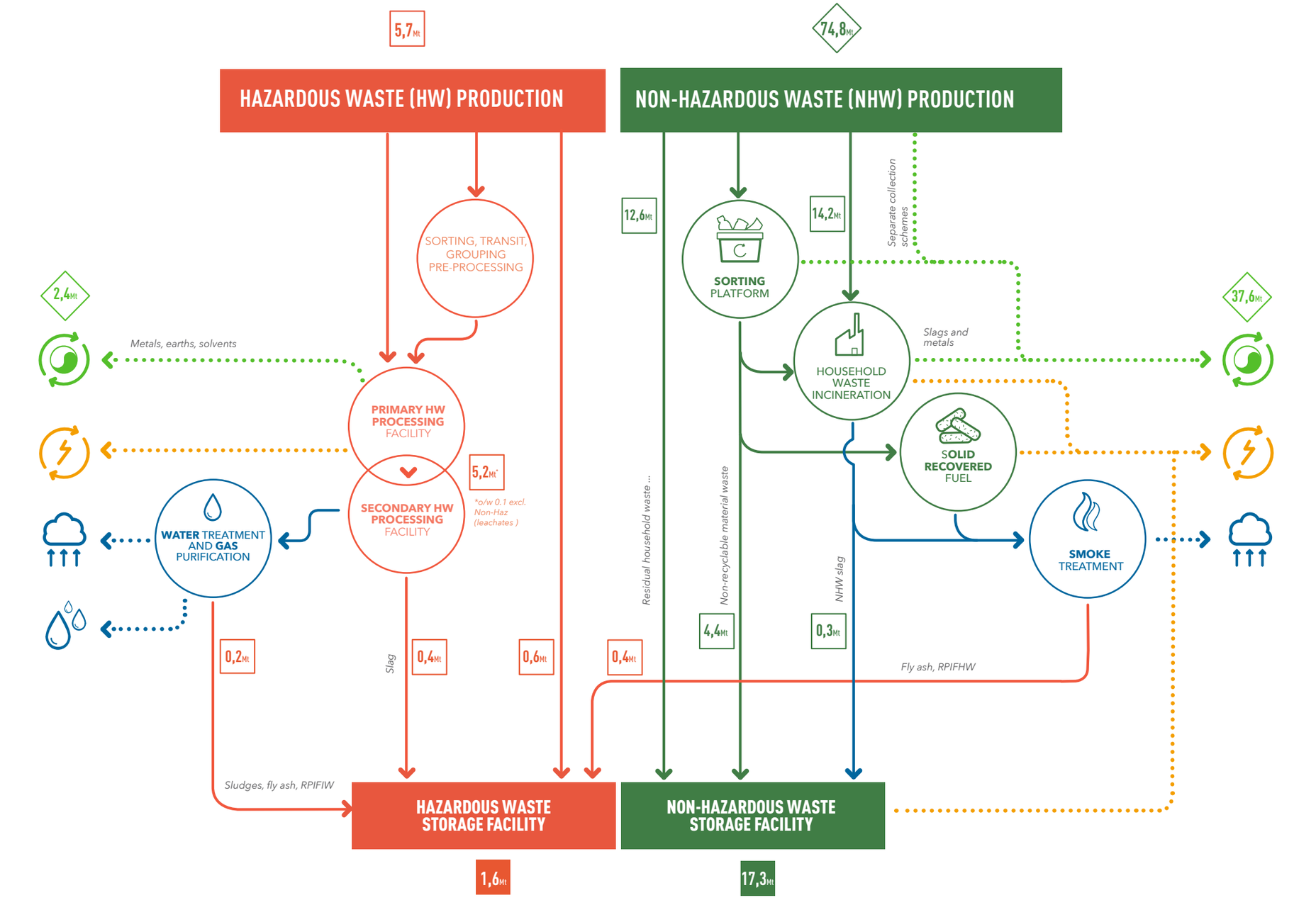
This recovery effort is primarily focused on noble materials, which exist in small quantities but have high value added and are sought-after by geostrategically important markets. Recycling these rare elements (zinc, nickel, lead, molybdenum, bromine, rare earths, etc.) is in part a response to the depletion of natural resources, or to the difficulty of mobilizing them for technical, political and geostrategic reasons.

Nationally, the treatment of hazardous waste helps to limit the stockpiling of 1.6 Mt/year for a total primary production of 6.1 Mt (0.4 Mt of which results from the treatment of non-hazardous waste).

Its waste treatment facilities enable it to offer high-quality comprehensive solutions that incorporate all environmental requirements.


Biogas and SRF energy recovery

DIAGRAM DEPICTING THE FATE OF WASTE IN FRANCE BASED ON TYPE AND TREATMENT PROCESS



THE CHOICE BETWEEN **THE RECYCLING OF MATERIALS** AND ENERGY RECOVERY


Final waste landfill

> ENERGY RECOVERY IS A METHOD OF TREATMENT PREFERRED OVER DISPOSAL BUT RESERVED TO WASTE THAT CANNOT BE REUSED OR RECYCLED

THE PREREQUISITES FOR SUCCESS

In addition to environmental benefits, the emerging circular economy creates wealth and jobs (including those related to the field of the social and solidarity-based economy) across the country, but its success relies on the fulfilling a number of conditions:

Compactness of the cycle

Limiting the number of processes in the reclamation periods before reverting to the market. The negative impacts (greenhouse gas emissions, water consumption or toxicity) are of course mitigated.

Potential renewal of the cycle

Maximizing the number of consecutive cycles. Product-service systems serve this purpose (from textile fiber to insulation material)

Utilization cascades

Diversifying uses in a world where materials become less and less noble as they are recycled (from paper to cardboard)

Dispersion of materials

Seeking trace elements submerged in mass and which can only rarely be isolated for optimal recovery (noble metals in alloys)

Cycle purity: no co-mingled or contaminated materials

Increasing the recovery and recycling potential in connection with the flow of non-contaminated (or unconsolidated) materials. In this regard, initial post-consumer waste-sorting is crucial.

LIMITATIONS TO TOTAL RECYCLING

The necessary strengthening of processors' requirements specifications to give high-quality waste a second life, both for material and for energy, is an illustration of the fact that large quantities of theoretically recyclable waste are downgraded to "final waste" requiring the use of a storage facility for non-hazardous waste:

- Hypothetically recyclable plastic pipe (PET, HDPE, etc.) from demolition sites: dirty and sandy, they are consistently downgraded to non-recoverable
- Nylon fishing nets: this material is soiled with shells, plant and mineral debris caught up in the mesh and impossible to extract
- Paper and cardboard that has been improperly stored outdoors and is wet.
- Rockwool used as a gardening medium, with remnants of plants and plastic ties, etc.

Sorting operations aiming at recycling materials or energy recovery generate "sub-waste" (notably recyclates from mixed waste fractions) which recyclers turn away for legitimate technical reasons because they plug furnace grates and interfere with combustion.

CONTRIBUTING TO **THE CIRCULAR** ECONOMY

The Group often operates as a link in a wider circular economy chain with its waste-producing customers. Regarding these producers, the Group works with them indirectly by facilitating the orientation of their waste to sectors where they become secondary raw materials (non-hazardous waste sorting platforms including household packaging on behalf of local communities).

Product-service systems:

The Group's treatment facilities (in particular those designed for hazardous waste) are collective centers. By making them so, the Group pools a very wide range of facilities to treat a broader spectrum of waste. As a result, it spares its industrial customers the expense of investing in facilities that they would use only temporarily.

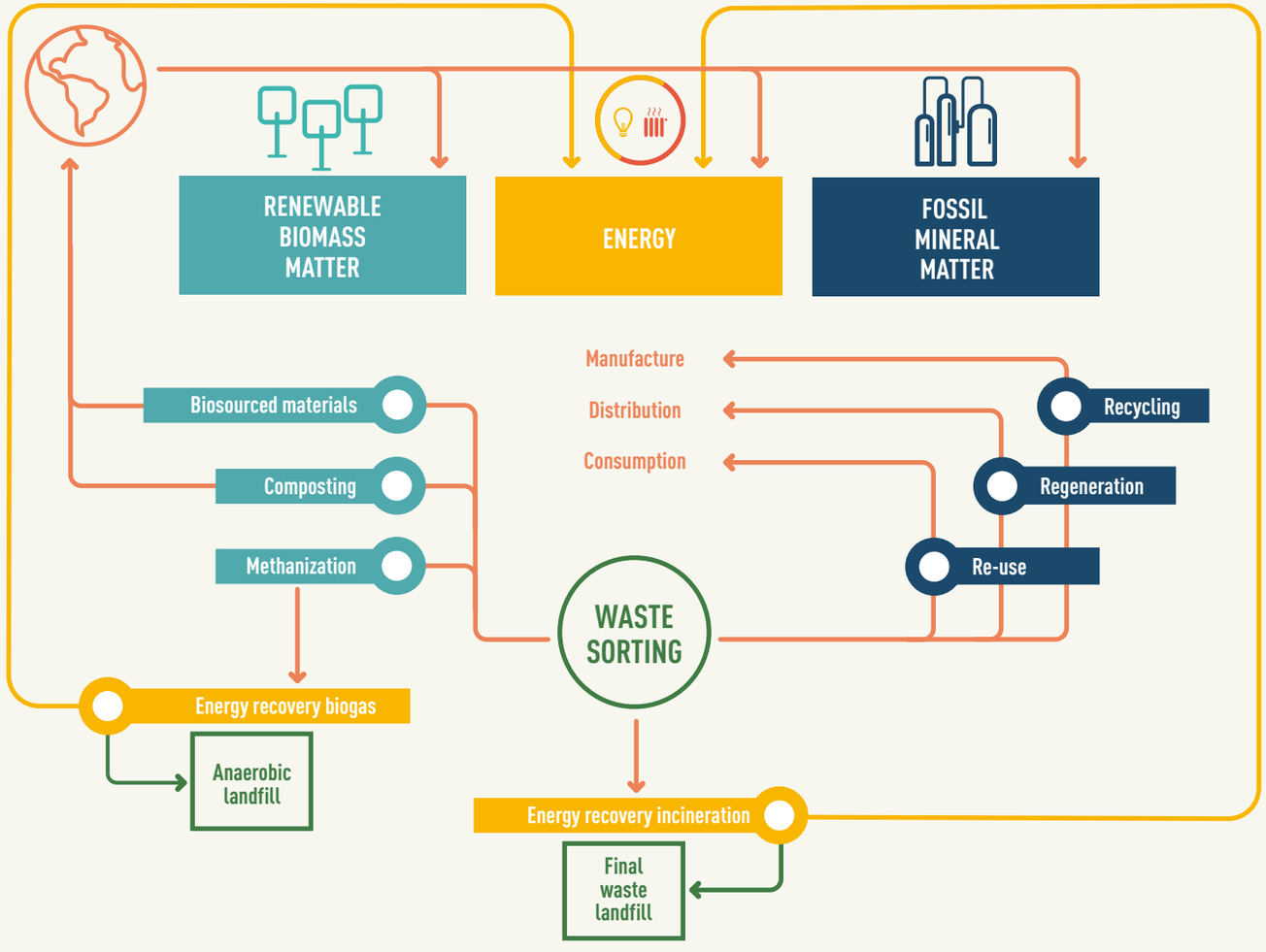
Industrial and regional ecology:

The Group has a long-standing practice of trading in material and energy in the areas in which it and its customers operate (petrochemicals in Rouen, chemicals in Salaise, etc.), local communities (district-heating in Nantes and Laval) or the agriculture world (dehydration of fodder in Mayenne).

Responsible consumption:

The Group's main activity with respect to consumption is energy recovery, thanks to which it has achieved nearly 200% self-sufficiency and is positioned as an outright producer of energy in electrical power grids and heating networks with a substantial share of renewable energy or energy produced from renewable sources.

"EXTRACTION CHANNELS DEVELOPED BY SÉCHÉ ENVIRONNEMENT"



IMPLEMENTATION

A range of high-performance facilities

The facilities owned outright by Séché Environnement or operated under service delegation contracts (public and private) cover the entire spectrum of treatment required for hazardous and non-hazardous waste.

Based on the geographic location where the activity is carried out, the choice of technology is made from a panel of facilities to best satisfy the expectations of its customers in compliance with the waste treatment hierarchy as laid down by the Waste Framework Directive of 2008 and the Act Respecting Energy Transition for a Green Economy (2015) pending future texts resulting from The Circular Economy Roadmap, in the process of being drawn up.

Outsourcing of the waste function

By outsourcing the environmental services of its customers - primarily major international industrial groups - Séché Environnement has, over the years, developed a framework to take charge of their waste problem in the framework of comprehensive management contracts, namely customized multi-year service contracts for waste management.

"AN OFFERING THAT IS CONSTANTLY ADAPTING TO CUSTOMER EXPECTATIONS"

Specialization in hazardous waste

The waste spectrum is not limited to household waste but also includes harmful residues for which Séché Environnement has acquired both the know-how and the facilities for their treatment.

Unlike household refuse, which is treated close to their place of production, hazardous waste is directed to highly-specialized facilities located in proximity to the main waste-producing customers, namely the chemical, oil and gas and cosmetics industry, and many other industrial segments.

Interventions in hostile environments

Interventions in hostile environments or involving the demolition of plant and equipment at the end of their useful lives containing harmful products (reactive, toxic, low radioactivity or biological products) are carried out by specially trained teams supported by logistics dedicated to the disposal of technological waste.

Capability for rapid deployment

The scheme is supplemented by waste grouping, identification and sorting platforms crisscrossing France in order to be in proximity to waste producers and to accurately direct their waste to the most appropriate facility. These facilities are also committed to intervening in any accidental pollution event within 4 hours, 7 days a week, 24 hours a day (Séché Urgences Interventions).

In France and worldwide

This extensive know-how is exported by the Group either through the operation of its hazardous waste treatment facilities in Germany, Spain, Mexico and Argentina, or, more recently, in Peru and Chile.

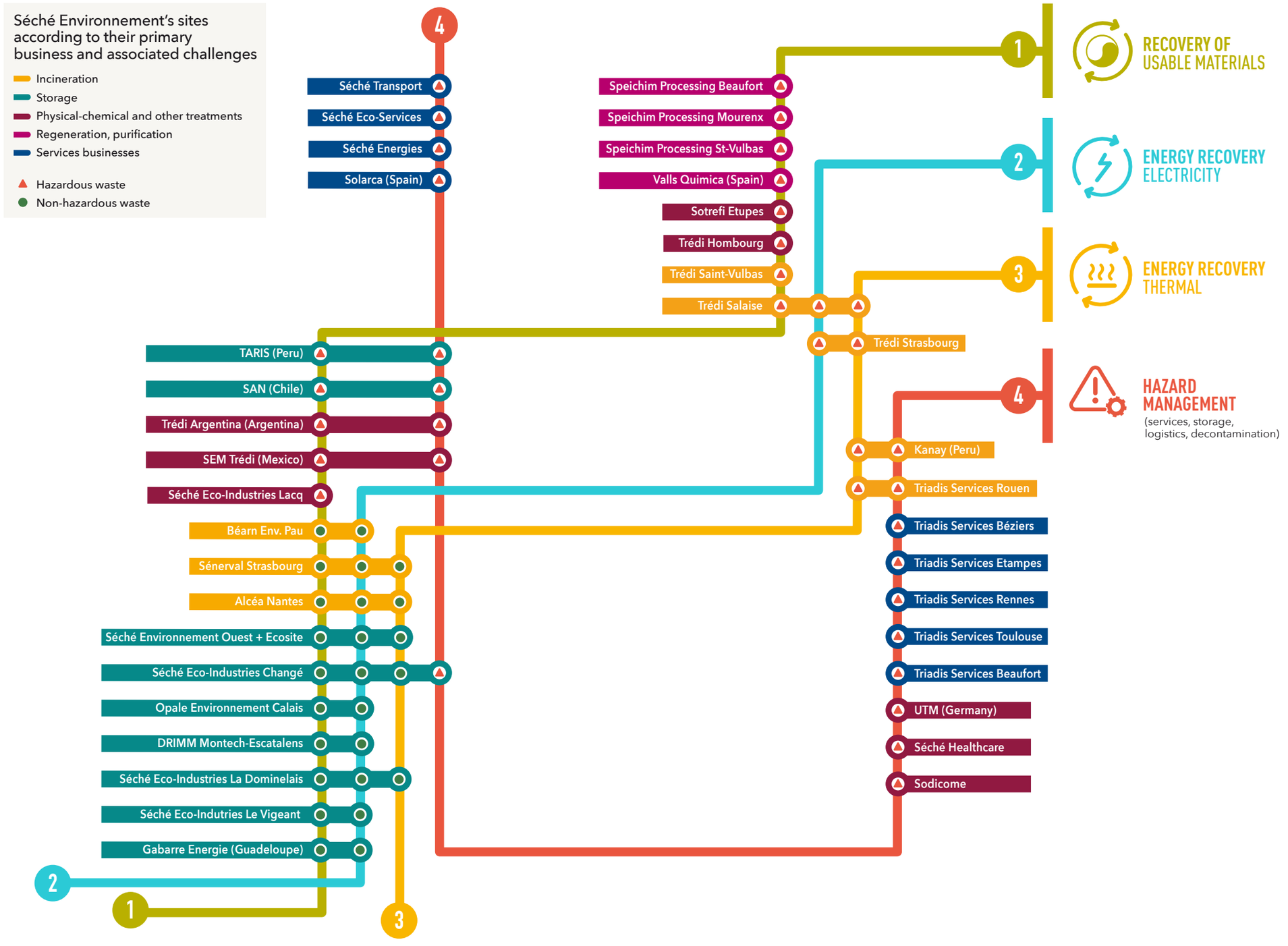
But the combination of facilities in France and decontamination know-how also enables the Group to project itself over five continents in connection with major decontamination or contaminant processing invitations to tender on behalf of customers like the United Nations, the FAO or European bodies.

Solvent regeneration

Sorting facility for household packaging

Quick intervention capability (SUI)

SPECIALIZED SITES ACCORDING TO STRATEGIC RECOVERY CHALLENGES



EXPORTING **KNOW-HOW**

Séché Environnement has purposely designed its organization in France to be in proximity to waste producers and to accurately direct their waste to the most suitable facility. This know-how is exported by the Group through the operation of hazardous waste treatment facilities in Germany, Spain, Mexico and Argentina.

The group has chosen to grow in Chile and Peru with the purchase of an ownership interest in Kanay in 2015 and, more recently (2017) the acquisitions of SAN (Chile) and Taris (Peru) to focus on the mining and oil and gas exploration sectors.

The acquisition of Solarca (Spain 2017), a specialist in industrial maintenance projects using chemical cleaning allows Séché Environnement to add to its "global offering" designed for its industrial customers.

But the combination of facilities in France and decontamination know-how also enables the Group to project itself over five continents in connection with major decontamination or contaminant processing invitations to tender on behalf of customers like the United Nations, the FAO or European bodies.

Hazardous waste landfill in Chile

Hazardous waste incinerator opening in Peru

THROUGH **THE LENS OF SUSTAINABLE DEVELOPMENT** GOALS

Staff members taking part to the Séché Day (2017)

- Les **The United Nations Sustainable Development Goals** (SDGs), which officially came into force on January 1, 2016, apply to all, whether governments or civil society.

  They call for a model of **"green" growth** that is less resource-intensive.

- The acquisition – on a voluntary basis – of skills, methods and thought processes that foster the creation of shared sustainable value, paves the way for a true corporate culture.

  This culture incorporates the concerns of other players into its own activities and its interactions with them in the context of a globalized market where public policy must act as the guarantor of **international regulation of trade** that avoids of social and environmental dumping.

COMMITMENT OF THE **CHAIRMAN** AND CHIEF EXECUTIVE OFFICER

Séché Environnement joined the United Nations Global Compact in 2003 within the framework of the voluntary arrangement instituted by the United Nations through which businesses, associations and NGOs are urged to adhere to ten universally accepted principles involving human rights, labor standards, the environment and combating corruption.

In 2014 we satisfied the criteria for the Advanced Level due to the quality of our efforts and reporting.

From these guidelines we adapted our own business ethics commitments through the corporate-level **Sustainable Development Charter**, the facility-level **Safety, Environmental and Quality Policies** and a **Code of Conduct and Actions** at individual employee level, currently in the process of being updated in the light of the entry into effect of the Sapin 2 Act.

The regulations set out in these charters, policies and codes do not substitute or replace national or international law with which the Group must strictly comply. These commitments are not binding but must nonetheless be made known to and applied by all the Group's employees. Their application is everyone's responsibility and, more specifically, that of persons assuming executive roles.

The objective is not to anticipate or codify everything. However, a few clear, precise principles combined with a sense of individual responsibility and good practice are a useful frame of reference for everyone in the Group.

Joël Séché
Chairman and CEO

> "Involve all the employees of the Group"

The Global Compact has 12,200 signatories, including 9,200 businesses (1,200 in France alone)

The Ten Principles of the UN Global Compact underpin the map of stakeholder concerns and their expectations

THE TEN PRINCIPLES OF THE UN GLOBAL COMPACT

Human rights

1. Businesses should support and respect the protection of internationally proclaimed human rights.

2. Businesses shouldmake sure that they are not complicit in human rights abuses

International labor standards

3. Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.

4. Businesses are urged to eliminate of all forms of forced and compulsory labor.

5. Businesses are urged to contribute to the effective abolition of child labor.

6. Businesses are urged to contribute to the effective abolition of child labor.

Environnement

7. Businesses should support a precautionary approach to environmental challenges.

8. Businesses should undertake initiatives to promote greater environmental responsibility.

9. Businesses should encourage the development and diffusion of environmentally friendly technologies.

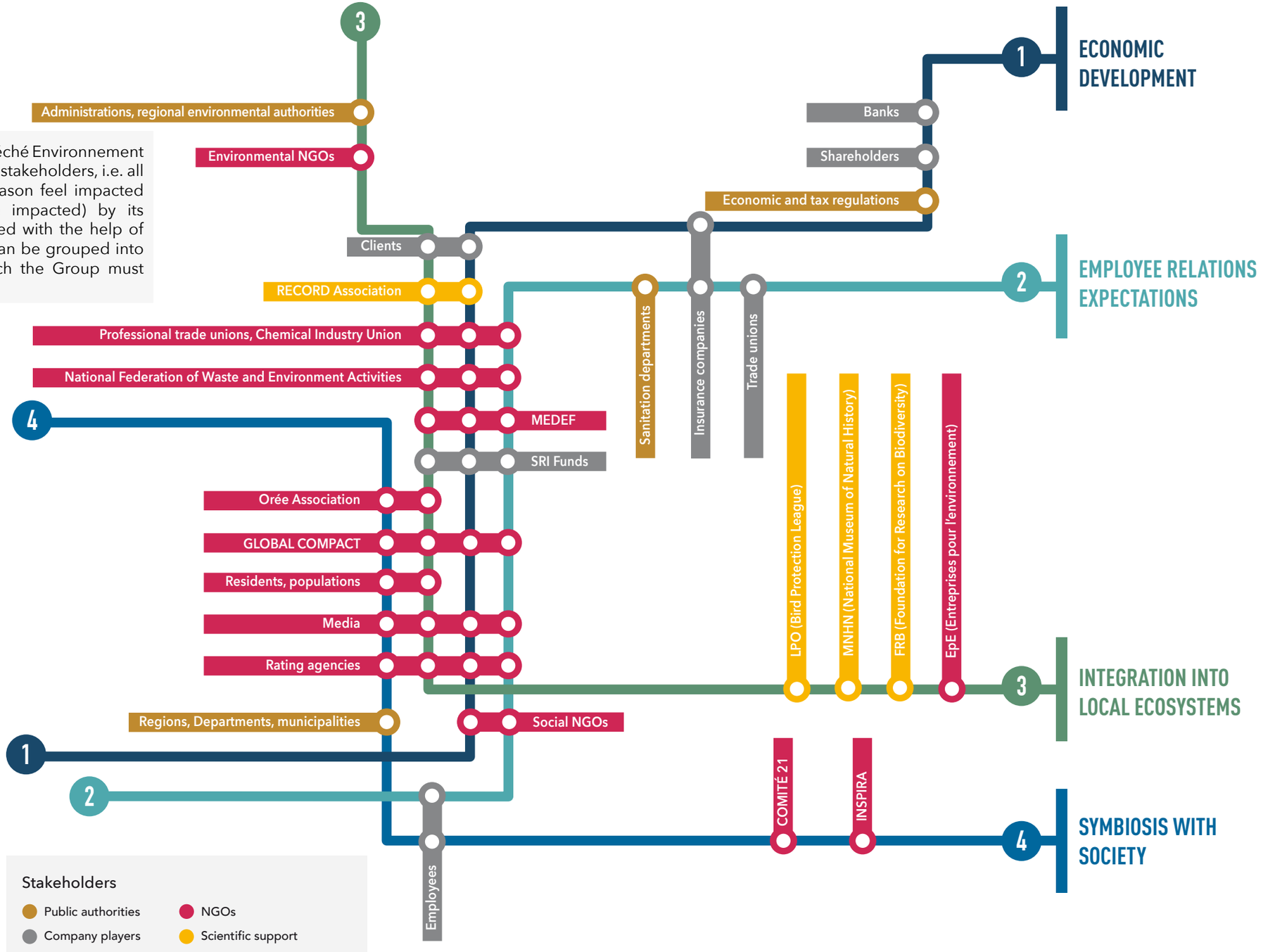
Combating corruption

10. Businesses should work against corruption in all its forms, including extortion and bribery.

*Participants must certify the actual implementation of the Ten Principles in a **"Communication of Progress"** (COP), a report that is uploaded and made available on the company's website.*

STAKEHOLDERS AND THEIR CONCERNS

The relationship between Séché Environnement and its environment and its stakeholders, i.e. all those who for whatever reason feel impacted (not only those who are impacted) by its activities have been mapped with the help of Comité 21. The concerns can be grouped into four main categories, which the Group must address.



TARGETS **SHARED** BY ALL ECONOMIC **OPERATORS**

5 GENDER EQUALITY

GENDER EQUALITY

EMPLOYEES IN FRANCE (2,508 worldwide)	1,881
PERCENTAGE OF EMPLOYEES WHO ARE WOMEN	23%
PERCENTAGE OF WOMEN SITTING ON THE BOARD OF DIRECTORS	44%
PERCENTAGE OF WOMEN EXECUTIVES	25%

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

INNOVATION AND INFRASTRUCTURE

- Séché Environnement is a member of RECORD, a cooperative network for research into waste partnering with industry, government bodies and researchers. It is a privileged place for the exchange of ideas and experiences as well as a technology and science intelligence tool.
- Launch in the city of Laval of the first local district-heating network supplied by a specially prepared fuel derived from waste that in the past was regarded as non-recoverable.
- Innovative research programs investigating recovery of usable materials from waste, the development of bio-sourced and biologically compostable materials based on waste from the agro-food industry.

11 SUSTAINABLE CITIES AND COMMUNITIES

SUSTAINABLE CITIES AND COMMUNITIES

WORLDWIDE

- Construction of two schools and a community center for the people living in Nueva Esperanza in the virgin Amazonian forest.
- Inauguration by the Minister for the Environment of the largest facility for the thermal treatment of waste in Peru (Kanay), providing to the local population, among other things, access to safe treatment of infectious clinical waste.

IN FRANCE

CONTRIBUTIONS TO THE REGIONAL ECONOMY	5.3M€
COLLECTED AS APPRENTICESHIP TAX	0.4M€
STAFF LIVE WITHIN 50 KM OF THE WORKPLACE	95%
TRAINEES WORKING UNDER ARRANGEMENTS LASTING MORE THAN ONE MONTH	90

8 DECENT WORK AND ECONOMIC GROWTH

DECENT WORK AND ECONOMIC GROWTH

DISABLED FTEs	76
HOURS OF TRAINING PROVIDED	30,656

10 REDUCED INEQUALITIES

REDUCED INEQUALITIES

YEARS OF SERVICE ON AVERAGE	12
AVERAGE AGE OF EMPLOYEES	43
COVERAGE RATE BY AN AGREEMENT ON EQUAL OPPORTUNITIES FOR WOMEN AND MEN AT WORK	96%

SPECIFIC TARGETS THAT ARE PARTICULARLY RELEVANT TO SÉCHÉ ENVIRONNEMENT

6 CLEAN WATER AND SANITATION

CLEAN WATER AND SANITATION

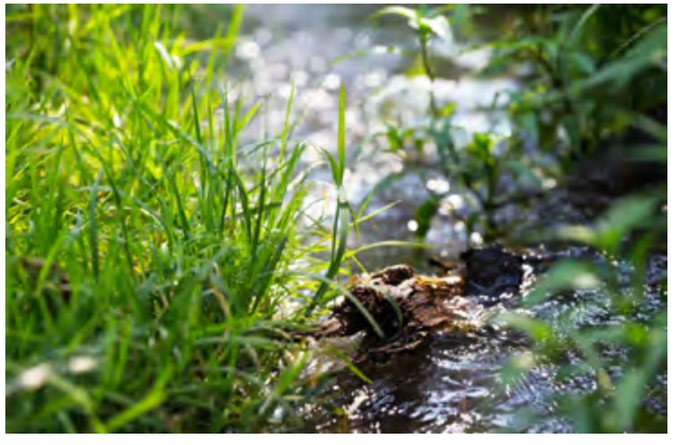
MILLION M³ OF WATER CONSUMED **3.2**

RELATIVE TO 2016 **-4.2%**

TAKEN FROM GROUNDWATER **80%**

RETURNED TO THE NATURAL ENVIRONMENT AFTER PURIFICATION **69%**

- Water is taken either from water supply systems or impoundment areas, or by pumping it from wells, none of which is situated in a RAMSAR protected wetland.



7 AFFORDABLE AND CLEAN ENERGY

AFFORDABLE AND CLEAN ENERGY

ENERGY GENERATED **696.9**

RELATIVE TO 2016 **+5,3%**

RENEWABLE ENERGY OR RECOVERED FROM WASTE HEAT **37%**

ENERGY SELF-SUFFICIENT **219%**

RELATIVE TO 2016 **+3pt**


SEI - Le Vigeant


SEO - La Croix Irtelle

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

RESPONSIBLE CONSUMPTION AND PRODUCTION

PERCENTAGE OF RAW MATERIALS NECESSARY FOR THE ACTIVITIES OF THE GROUP DERIVED FROM WASTE **50%**

REDUCTION IN NET CONSUMPTION OF WATER **-10.3%**

- By signing the Responsible Care® charter of the Union des Industries Chimiques (French chemical industries trade body) Trédi and Speichim Processing confirmed their drive for improvement in the areas of health, safety, the management of chemicals and the protection of the environment.
- Séché Environnement Ouest has been awarded Ecocert certification for its production of compost


SEO - Vallet

13 CLIMATE ACTION

Contrôlé par ECOCERT ENGAGEMENT CLIMAT

Objectif CO_2 Les transporteurs s'engagent

CLIMATE ACTION

GHG AVOIDED THANKS TO RECOVERY	=15%	OF GHG EMISSIONS FROM FOSSIL FUELS
INDUSTRIAL GAS GHG EMISSIONS CONSIDERABLY REDUCED	=	ERASURE OF THE CARBON FOOTPRINT OF NEARLY 350,000 PEOPLE
CO_2 / t.km TRANSPORTED	-7.7%	in 3 years

15 LIFE ON LAND

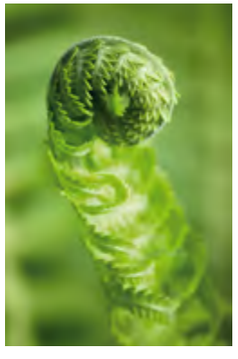
Contrôlé par ECOCERT ENGAGEMENT BIODIVERSITÉ

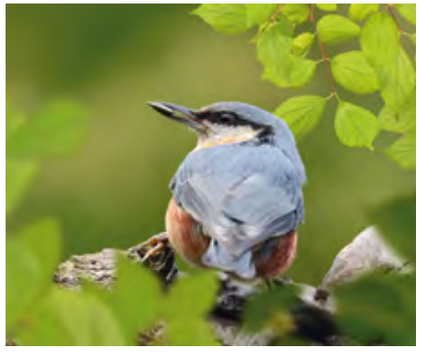
Engagement reconnu – Stratégie nationale pour la BIODIVERSITÉ

PROTECTION OF TERRESTRIAL FAUNA AND FLORA

IN 5 YEARS

TREES AND SHRUBS PLANTED	27 000
LINEAR KM OF PLANTINGS	33
HA. SOWN	85





AVERAGE NUMBER OF SPECIES IDENTIFIED PER SITE CONCERNED

OBIRDS	43	AMPHIBIANS	8
DRAGONFLIES	14	BATS	6

CLIMATE AND BIODIVERSITY IN PERU

- The certification of TARIS (Peru) to ISO 14064-1 was renewed for another three years for quantifying, reporting and fighting against greenhouse gas emissions. This certification covers all its activities (treatment plant, business offices and activities relating to its global offer to its customers).
- To offset any CO_2 emissions, TARIS has launched a reforestation project on the site of its treatment plant. So far, 130 Peruvian peppertrees (Schinus molle) have been planted and a further 500 will be planted by 2020.

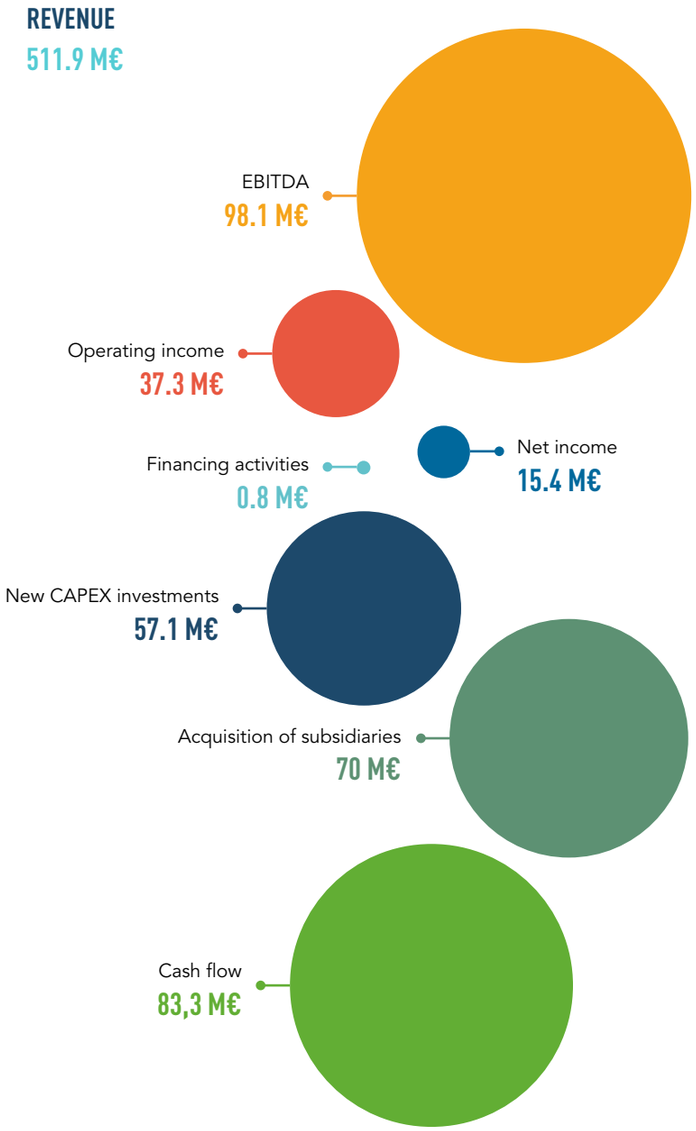
ECONOMIC DEVELOPMENT

Control room in an incineration plant

"PROVIDE CUSTOMERS WITH SERVICES SUCH AS GLOBAL WASTE RECOVERY AND TREATMENT SOLUTIONS"

- Ensure the Group's future through controlled, profitable, long-term growth.
- Provide its clients with a global waste handling and treatment service meeting all regulatory requirements, and guaranteeing safety, traceability and transparency, which is reflected in respect for man and the environment on a daily basis.

KEY FINANCIAL FIGURES



2017 confirmed the internal and external growth dynamic of Séché Environnement in the waste recovery and treatment markets in France and abroad.

The scale and high quality of our acquisitions, as well as their contribution to the year's activity and net income, have strengthened the Group's profitable growth strategy and its core business in France as well as abroad, where Séché Environnement doubled its revenue in 2017.

In its historical scope, Séché Environnement benefited from the increase in new recovery and treatment capacity, which enabled it to respond with the volume and value added needed to meet the increasing demand of its clients, especially industrial ones.

Furthermore, Séché Environnement substantially expanded its permits to operate its Changé site and finalized its landmark project to provide energy from Solid Recovered Fuel (SRF) to the local district-heating network of the city of Laval. These achievements, combined with the acquisition of Séché Environnement Ouest, will help it remain a leader in the non-hazardous waste recovery markets in Western France.

For the first time in its history, Séché Environnement exceeded a half-billion euros in revenue in 2017. Net income, which is up sharply, confirms the relevance of its profitable growth strategy, founded on targeted investments to address changes in customer needs with value-added, is bearing fruit.

In 2018, Séché Environnement will continue its profitable growth strategy, founded on increases in its capabilities, a development investment policy with greater selectivity, and generating positive cash flows. To do so, the Group will work to optimize all of its operational and financial tools to accelerate its deleveraging.

These goals make it possible to predict that 2018 will bring a further increase in our net income and solid generation of free cash flow, while maintaining our business' pace of growth.

Joël Séché
Chairman and CEO
Board of Directors Meeting,
February 28, 2018

SIMPLIFIED CONSOLIDATED INCOME STATEMENT (IN € MILLIONS)	2016	2017
Revenue (reported)	478.3	534.4
o/w contributed revenue	**460.1**	**511.9**
EBITDA	89.1	98.1
Current operating income	34.4	39.7
Operating income	26.2	37.3
Financial income	(10.7)	(13.6)
Taxes	(10.5)	(7.7)
NET INCOME (GROUP SHARE)	**3.9**	**15.4**


City of Laval (France - 53)

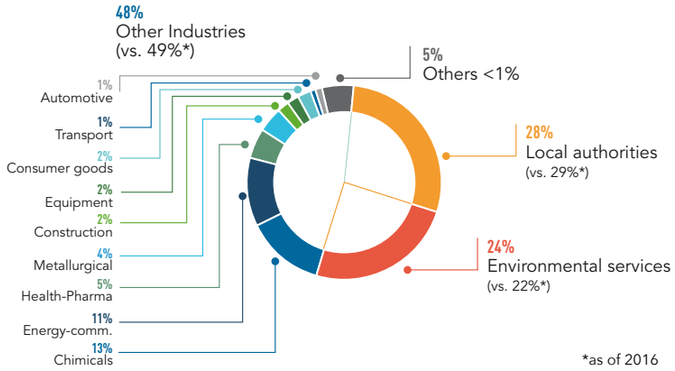
INDUSTRIAL CHALLENGES

SRF: a new method of recovering non-hazardous waste

Derived from the combustible components of non-recoverable waste (such as recycling rejects), SRF is one of the new methods of recovery identified and promoted by the Act Respecting Energy Transition to Support Green Growth. Derived from waste once regarded as final and therefore destined for landfill, they are an alternative source of energy to fossil fuels.

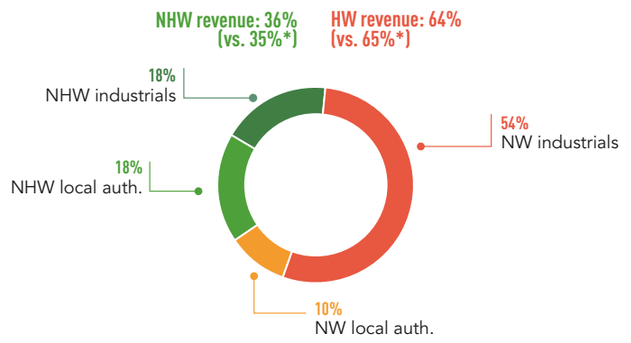
A local energy source, their use is in response to national development objectives promoting regional circular economy solutions. With this new method of recovery, waste produced by a region is also its energy resource.

Breakdown of contributed revenue at December 31,2017 by activity sector



*as of 2016

Breakdown of contributed revenue at December 31,2017 by division and client type



*as of 2016

RECOVERY OF USABLE MATERIALS

Séché Environnement considers the recovery of materials through dedicated facilities as a better option. The household packaging sorting center at Changé is one example, as is the center in Montech. They have assembled the very latest technology. More specifically, for its hazardous waste management component, its purpose is to support the growth of its industrial customer base by making is chemical treatment expertise available for both the recovery of usable materials (solvent regeneration, bromine recovery, recovery of metal hydroxide sludges, etc.) and energy.

Sorted waste collection

ENERGY RECOVERY

The Group is positioned in the areas of renewable energy or energy extracted from waste in the form of heat or electricity and is heavily involved in the development of green, eco-innovative technologies in connection with the recovery of waste (green chemistry or gasification of waste). Cogeneration at Changé represents progress in this area, the first facility that recovers sorting rejects (solid recovered fuel) to provide heating to a local community.

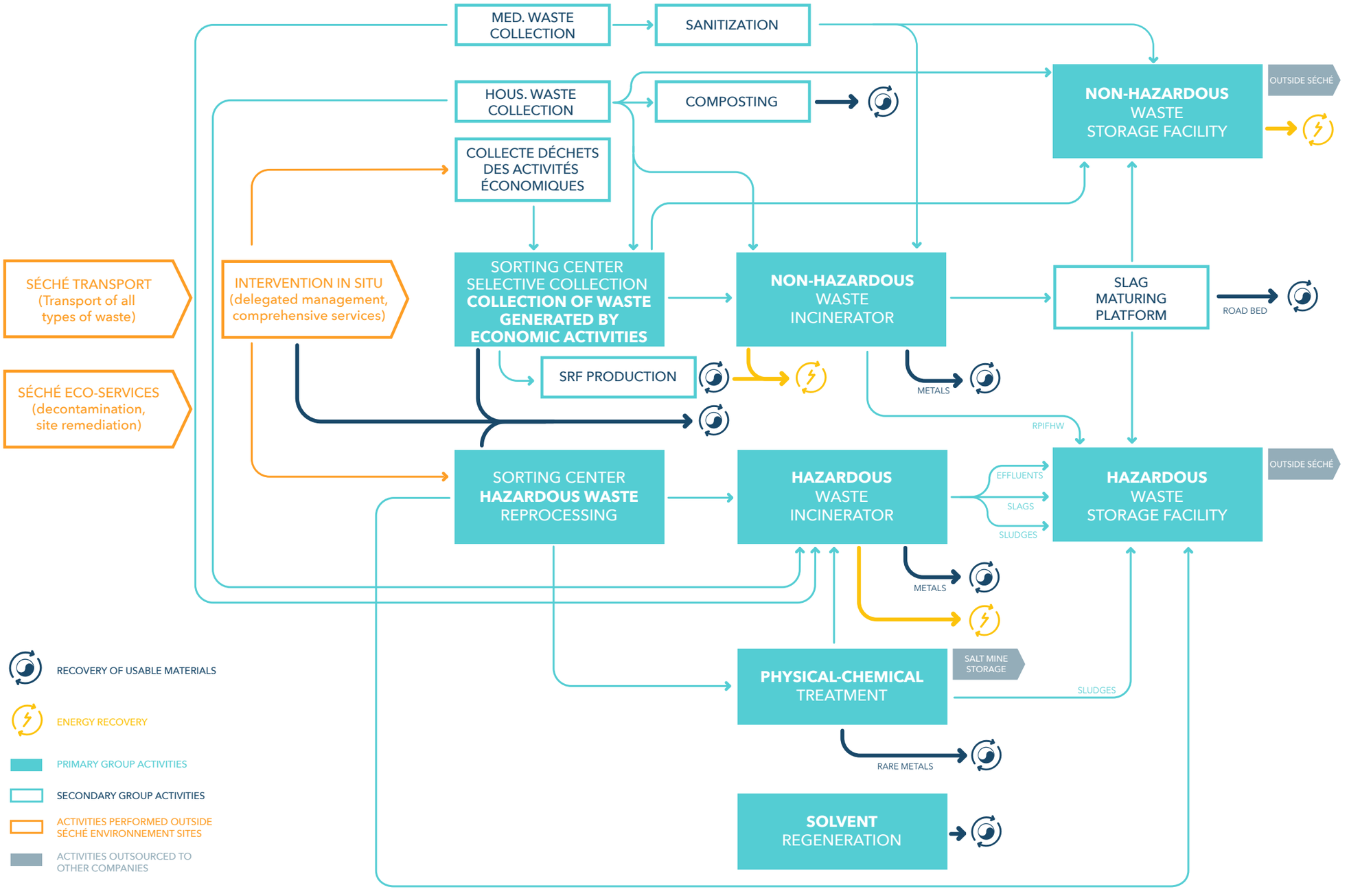
Biogas capture

HAZARD MANAGEMENT

By extracting resources from waste and limiting the potential harm from "final" waste by playing a role in site decontamination and in the rehabilitation of polluted industrial sites, Séché Environnement works on a daily basis to protect health and the environment and, in doing so, places great importance on dialog with its stakeholders and on safeguarding ecosystems. Over the years, our decontamination and transport management teams have developed facilities closer to our customers across the whole of France.

UMICORE site remediation (France – Vivier (52))

OVERVIEW OF THE ACTIVITIES OF SÉCHÉ ENVIRONNEMENT



SRF: Solid Recovered Fuel
Hous. Waste: Household Waste

RPIFIW: Residues from the Purification of Incineration Fumes from Industrial Waste
RPIFHW: Residues from the Purification of Incineration Fumes from Household Waste

MED. WASTE: Hospital & Infectious Healthcare Waste

A "FIRST" IN FRANCE

Energy recovery from non-recyclable waste and fuels (SRF: solid recovered fuel) is one of the key aspects of The Act Respecting Energy Transition for a Green Economy ("LTECV") to the extent that it is inseparable from the target of a 50% reduction in landfills by 2025 laid down by law. Although such recovery is the focus of a number of projects, its embodiment is often difficult in the light of a tricky techno-economic equation. The facility built by Séché Environnement to provide for the energy needs of Laval's urban heating network is a first.

It was designed and built by integrating existing industrial ecological approaches: for many years the Changé facility provided energy to the Déshyouest Agricultural Cooperative for the dehydration of fresh fodder, carried out primarily in summer.

In order to fine-tune the resource, the SRF pressure vessel was used to cover the needs of Déshyouest in summer and will serve to heat the hot water of the Laval's municipal heating system in winter by means of a 10-km interconnection.

This "first" reflects, in the light of the scale of the investment, Séché Environnement's desire of nearly 40 years to frame its environmental protection activities: from the outset by safeguarding biodiversity supplemented today by the promotion of the circular economy and the efficient use of resources.

Mobilization of government players alongside Séché Environnement

The elected officials of Laval knew exactly how to make the most of this opportunity when they wanted to forgo the use of fossil fuels in their local district-heating network and to grow. Today, not only does this network no longer consume fossil fuels but the size of Laval has doubled. The Government, via the regional environmental authorities (DREALs) and the French agency for energy use and the environment (ADEME), encouraged this exemplary effort, and, thanks to "waste" and the "heat" assistance measures, made a difference. The Regional Loire Valley Council and the Mayenne Regional Council also helped to bring the project to fruition, notably by positioning themselves as new customers of the local district-heating network (secondary schools, low-cost housing, etc.).

TECHNICAL AND ECONOMIC CHARACTERISTICS:

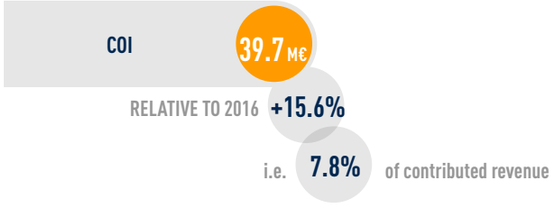
- Changé/Laval interconnection: 10km hot water system
- The Changé Energy hub: energy capacity of 22 MW (biogas from a storage facility for non-hazardous waste and a SRF-fired fluidized bed)
- Laval local district-heating: Ultimately 70,000 MWh/year
- SRF utilizes products derived from the waste generated by economic activities, recycling rejects separate collection and recycling schemes and waste from the furniture sector
- Séché Environnement Investment: €21.4m
- ADEME funding (Heat Fund and Waste Fund): €6.1m*

Energy recovery unit (France - Changé)

Neighborhood granting district heating (France – Laval)

VALUATION OF ECONOMIC CAPITAL

AN INCREASE IN CURRENT OPERATING INCOME (COI)



EBITDA

EBITDA stands at **€98.1m** (vs. €89.1m one year earlier). This 10.1% increase is primarily being driven by the contribution of the new scope (€9.4m), while in the historical scope, the increase in EBITDA is being hampered by the rise in the structural costs generated by scope change management.

Le résultat opérationnel courant

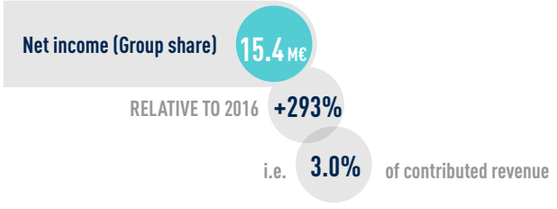
Current operating income (COI) of **€39.7m is up by 15.6%** on reported basis (+4.9% at constant scope), for a current operating margin of **7.8% of contributed revenue** on a reported basis (7.7% of contributed revenue at constant scope vs. 7.5% one year earlier).

The increase in COI stems from:

- higher operating income in the historical scope: +€1.6m
- increased structural costs (support function employee expenses) to accompany development: (€1.9m);
- improved balance in allocations, amortization and provisions, stemming from the decline in amortization of landfill cells (calculated in volumes buried) and improvement of risks (customers and others): +€2.0m;
- contribution of newly-consolidated business: +€3.7m.
  - companies acquired in France for a total of €1.0m
  - companies acquired outside France for a total of €2.7m

The current operating income of the new scope therefore stands at **8.4% of its revenue**, or a level higher than that of the historical scope.

SHARP INCREASE IN NET INCOME (GROUP SHARE)



Operating income

Operating income was boosted by the contribution of the newly adjusted scope and the favorable outcome of a tax-related lawsuit involving property tax.

Financial income

Financial income was **-€13.6m** as of December 31, 2017 vs. -€10.7m in 2016. This worsening situation is primarily due to the increase in average debt over the period, with the **annualized debt** rate staying **virtually stable, at 3.26%** in 2017 (vs. 3.23% in 2016).

Furthermore, this income is supported, in the amount of -€0.8m, by the foreign exchange income of the newly integrated companies.

Net income (Group share)

Tax liabilities in 2017 stood at -€7.7m vs. -€10.5m the previous year. In 2016, the tax liability was impacted by the reduction in the net active position of deferred taxes, equal to -€5.0m.

The share in the net income of associates in 2017 was not significant due to the improved profitability of Gerep and Kanay (Peru).

Net income from discontinued operations was -€0.5m and relates the inactive company, Hungaropec (Hungary). Note that this company was sold at the end of the fiscal year with no effect on the financial statements.

In the light of these elements, Séché Environnement had net **income of €15.4m (Group share)** equal to **3.0% of contributed revenue** (vs. -€3.9m in 2016, i.e. -0.8% of contributed revenue).

SOUND CAPITAL STRUCTURE

Investing activities

Recognized industrial investments stood at €60.8m in 2017. Excluding concession investments, the company's own investments totaled €57.7m (vs. €52.3m one year ago), €20.3m of which was for investments related to expanding permits for the Changé site and to development projects for recovery (material or energy) or treatment (platforms) facilities.

Financial investments primarily involved external growth operations, with **€70.9m** in net cash disbursed for acquisitions.

Cash flow

Gross cash flow grew substantially to €64.4m (vs. €11.1m in 2016) particularly due to the combined effect of EBITDA growth (+€10.0m), change in WCR (+€30.2m), and, to a lesser extent, the -€1.4m reduction in tax expense.

It covers net **industrial development investment expenses,** including those related to the new scope, equal to **€21.3m.**

Borrowing

Net financial debt stood at **€325.8m** (vs. €279.0m at December 31, 2016): this trend mainly reflects the effect of external growth operations for the period, net of the generation of cash flow in the second half.

	Year-end 2016	Year-end 2017	Requirements, June 18
Gearing (NFD/Equity)	1.2x	1.3x	1.4x
Leverage (NFD/EBITDA)	3.1x	3.3x	3.5x

ASSET AND STOCK MARKET **VALUATION MANAGEMENT**

20 YEARS AS A LISTED COMPANY

To mark this milestone, Euronext invited Joël Séché to a Bell Ceremony, which symbolically closes the day's trading session in Paris.

Eric Forest, Chairman and CEO of EnterNext, a platform created to help mid-tier companies listed on Euronext, highlighted Séché Environnement's exemplary performance on the stock market over the past 20 years. He emphasized the size of the Mid-Caps segment on the Paris market, the category into which Séché Environnement falls, and recognized the extent to which listed Mid-Caps are a crucial sector of the French economy. He further underscored that these companies, which are the most dynamic in the economy, are the best performers on the market in the medium term.

Joël Séché, flanked by his two sons, Maxime and Guillaume, recalled how the Paris stock market provided a family business in Mayenne with the resources to become a leading group in the waste markets of France and now internationally.

In particular, he stated: *"A guarantee of transparency, the listing of our shares on the stock market has allowed us to establish our operational and financial credibility with our customers, producers and local communities in a market that is dominated by the largest traditional operators. Likewise, the listing of our shares on the stock market has given us value and provided us with cash. In other words, it has given us the financial leverage to carry out the financial operations which have transformed our Group and shaped its current profile."*

ELIGIBLE PEA PME

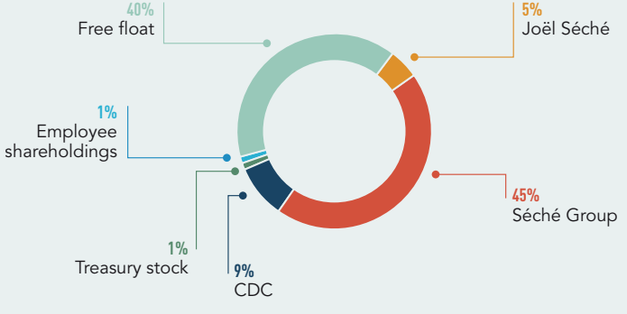
Gaïa INDEX

Gaïa Rating is an information system dedicated to analyzing ESG in Small & Mid Caps. Séché Environnement has been a member since 2010 and in 2017 was ranked 13th among the 73 firms in its €150 to €500 million in revenues category and 53rd among the 230 firms rated, all sizes combined.

SHAREHOLDERS

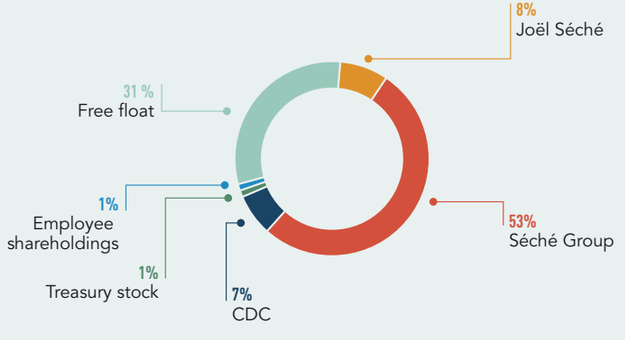
Share ownership

AT END-2017:



Voting rights

AT END-2017:



STOCK MARKET PERFORMANCE

In 2017, the markets were bolstered by the return of balanced global growth with interest rates still at low levels, making financial or cyclical stocks more attractive than more defensive or highly leveraged stocks.

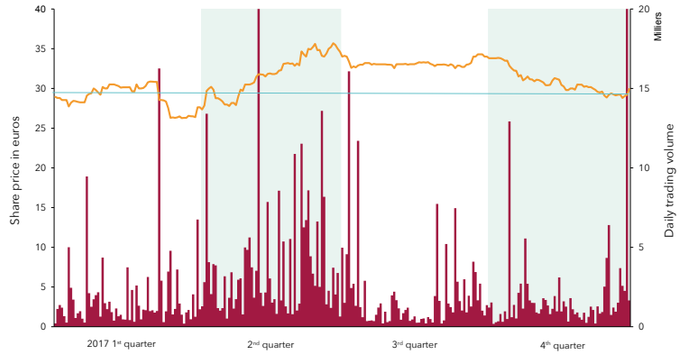
Against this drop, CAC 40 stocks posted broad gains during the first half of the year before undergoing a substantial correction during the summer. By the end of the year, however, they were back on a growth track setting record highs, ending the year with a gain of +9.3%.

Like the rest of the Paris market, the performance of Séché Environnement shares was uneven. As a result, our shares posted strong performance in the first half of the year (rising 25.3% to a record high of €35.69 on June 27), buoyed by strong prospects for economic growth and by the M&A newsflow in France and elsewhere.

Despite the continuing favorable consensus view of the markets, in the second half of the year our share gave up most of its previous gains, as it was hurt by low levels of liquidity in the context of profit-taking, which impacted all mid-caps. The stock closed at €29.91 per share, reflecting annual performance of +3.45%.

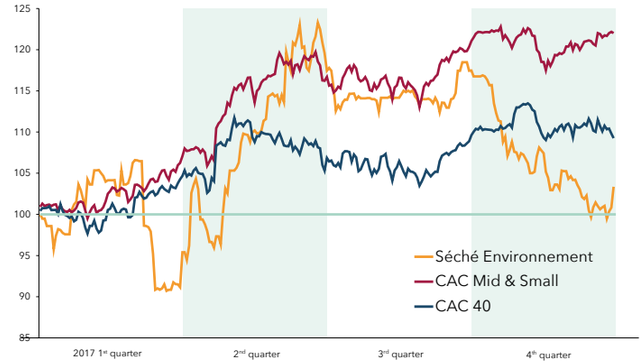
Changes in share price and trading volumes

EUROLIST PARIS BY NYSE EURONEXT (COMPARTIMENT B)



Comparison of share price and indices

CAC 40 & CAC MID & SMALL



GOVERNANCE

DIRECTORS (YEAR-END 2017)	1ST APPOINTMENT	INDEPENDENT DIRECTOR
Joël Séché (PDG)	19/10/81	
Philippe Valletoux	11/05/07	○
Jean-Pierre Vallée	29/11/93	
Guillaume Cadiou	28/04/15	○
Carine Salvy	28/04/15	○
Pascale Amenc	28/04/15	○
Pascaline de Dreuzy	27/04/17	○
Marina Niforos	27/04/17	○
Séché Group (Maxime Séché)	01/12/15	

MEDEF afep

Since 2015, Séché Environnement has relied on the provisions of the AFEP-MEDEF code for the organization of its governance arrangement. This code plays a key role in the development of good governance policies and the dissemination of best practices. Revisions to this code give rise to a consultation among the players concerned, in particular the public authorities, shareholders' associations, investors, proxy voting advisory firms, etc. It helps companies draw up their annual financial statements, particularly regarding the matter of presenting information on the remuneration of directors and senior executives subject to vote by the shareholders.

Detailed information may be found in the Séché Environnement Registration Document, which can be viewed on its web site.

44% ARE WOMEN

67% ARE INDEPENDENT DIRECTORS

PERFECT ATTENDANCE

EMPLOYEE RELATIONS
EXPECTATIONS

> **ONLY AN AMBITIOUS TRAINING POLICY IS LIKELY TO ENABLE THE COMPANY TO ACHIEVE ITS OBJECTIVES IN TERMS OF SOCIAL RESPONSIBILITY**

- Being a creator of jobs
- Fostering the professional development of the Group employees through appropriate recruitment and training policies;
- Being attentive to employees' health and safety conditions in the workplace

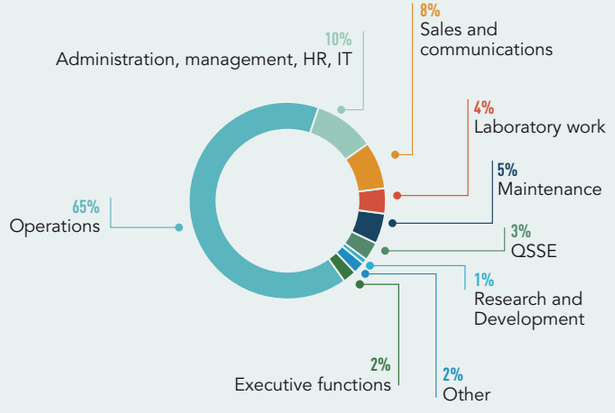
DYNAMICS OF **EMPLOYMENT POLICY**

EMPLOYMENT POLICY IS BASED PRINCIPALLY ON:

- Stable employment and fostering employee loyalty
- Respect for diversity
- Safety in the workplace
- Continuing education
- Time management

Workforce by category

Functions exercised in 2017



95.4 %
OF EMPLOYMENT AGREEMENTS ARE OPEN-ENDED


Environmental diagnosis training

WORLDWIDE HEADCOUNT:
2,508
OF WHOM 1,881 WERE BASED IN FRANCE AS OF THE END OF 2017


Second aid crew members training

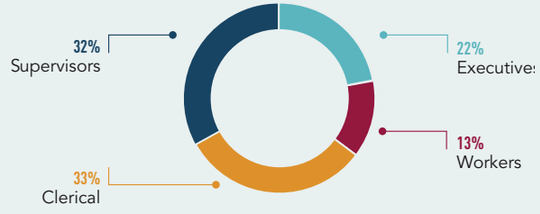
31,000 HOURS OF TRAINING IN FRANCE

TRAINING

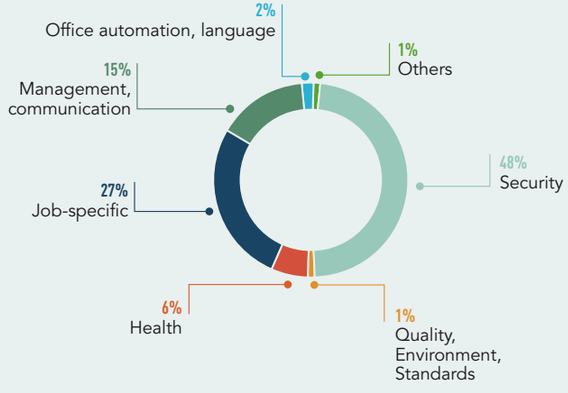
Only an ambitious training policy is likely to help the company meet its objectives in terms of Social Responsibility.

To achieve this aim, this policy must enable each and every employee to acquire a viewpoint, culture and knowledge in an appropriate way. Continuous training is a significant aspect of the professional development of our employees. It includes measures to help employees adapt their skills to the demands of their jobs, as well as giving them a way to move up the job ladder, stay in jobs and develop their skills further.

Number of hours taught



Subjects of training



MAJOR SOCIAL **BALANCES**

ADHERENCE TO KEY PRINCIPLES

The Group describes itself as concerned by respect for human rights in its different forms (right to collective bargaining, elimination of forced labor and/or the abolition of child labor and respect for indigenous people).

However, it does not regard itself as highly exposed to these risks, since the Group conducts its activities almost exclusively in France, where all salaried employees are covered by a collective bargaining agreement and where trade union meetings and the representation of employees take place under regulations governing industrial relations, and where the application of the law prohibits behaviors that violate human dignity.

The Group does not use production supplies from countries exposed to these risks.

Long-service award, more than 20 years of service and more than 20 years of service at Séché Environnement

EQUAL OPPORTUNITY FOR MEN AND WOMEN

OCCUPATIONAL

All organizations employing more than 50 employees are covered by an equal opportunity agreement, i.e. **96%** of all staff

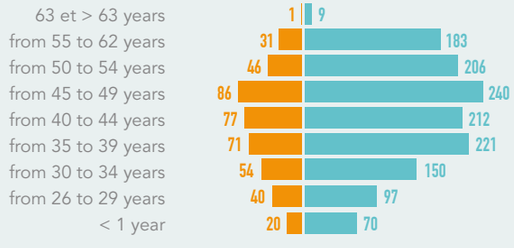
GENDER

Women represent **23%** of the workforce and **25%** of managerial staff (executive level employees and supervisors)

GENERATIONAL

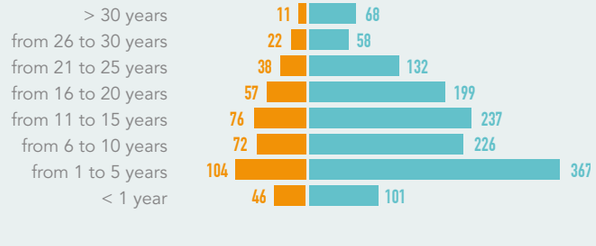
Age distribution

43.3 YEARS ON AVERAGE

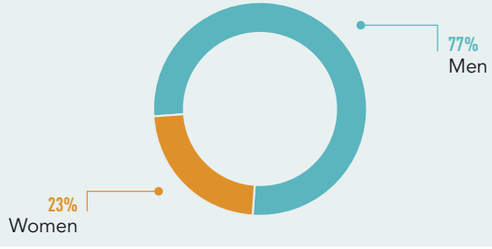


Lenght of service distribution

12.2 YEARS ON AVERAGE



EMPLOYEES UNDER 26 YEARS OF AGE **5%**



EMPLOYEES OVER 45 YEARS OF AGE **45%**

Séché Environnement international team

SÉCHÉ DAY

Assembling 20% of global headcount in one place is a challenge, but an action vital for the development of a corporate culture during a phase of strong growth. In the autumn of 2017, Séché Environnement organized an event to welcome employees who had joined the Group in the previous year, whether based in South America, Spain or western France.

Principles for a successful corporate culture

1. **Engagement:** Creating conditions conducive to the emergence of new ideas by assembling the best talent in every field, giving them the freedom to put forward solutions and take effective initiatives by leveraging the entrepreneurial ability and cooperative capacity of all employees.

2. **Conscientiousness:** integrating into the core of the Group's strategy gender diversity, equal opportunities, the affirmation of differences, professional integrity, the quality of life at work, the preservation of biodiversity and demonstrating commitment so that progress in this area can make a difference in a competitive market. Attentive listening to stakeholders and their expectations in this respect is very important.

3. **Contextualization:** being committed in a manner appropriate for the size of the Group, the realities of its labor market and its activities in France and around the world. By recognizing that there is no one-size-fits-all solution but that we have an obligation to act as a responsible company. For Séché Environnement, this means framing its action within the circular economy, ensuring the health and safety of all (managing hazards and working conditions) in a protected environment (controlling impacts, including those that might affect climate change and biodiversity) designed to ensure sustainable growth.

COMMITMENT TO **HELPING THE DISABLED**

The Group is actively involved in promoting the occupational integration of disabled workers.

In this connection, training and awareness-raising initiatives are conducted to inform the workforce:

- about the impairments that may be recognized as disabilities,
- about players outside the company who are likely to provide help to employees with analyzing the limitations linked to the disability and studying the possibilities for adapting workstations.

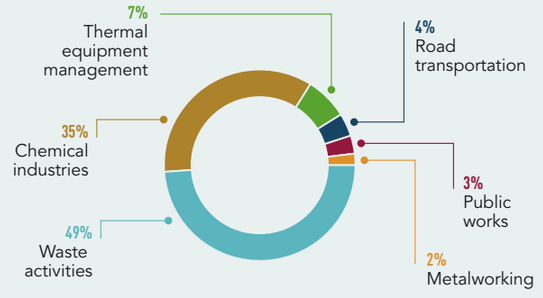
In connection with Hire the Handicapped Week, one message a day was posted on displays at the Trédi Salaise, Saint Vulbas and Speichim sites.

SÉCHÉ ENVIRONNEMENT PARTICIPATED IN THE CHÂTEAU-GONTIER **"HANDICAFÉ"**

Job speed-dating brought together people with disabilities with companies operating in the Château-Gontier labor market. This event was organized in connection with Hire the Handicapped Week.

The purpose of the Handicafé, organized by GROUPE ID'EES, was to provide support and coaching to job applicants during a face-to-face interview with a professional. Then, subsequently, when the applicant fits the profile decided upon by the employer, an immersion internship and possibly even an employment contract may be offered.

Collective bargaining agreements



THE QUALITY OF **SOCIAL DIALOG**

Séché Environnement is very attached to the quality of its industrial relations, since the improvement of individual and collective performance requires major involvement from all employees, and their contribution to pursue corporate objectives. To achieve this, the Group calls on:

- The intelligence and initiative of the men and women who work for the company;
- Their individual mobilization on a daily basis;
- The responsiveness on the part of all, and cohesion in the actions they undertake.

It is important for the Group to communicate its values to all of its employees. These exchanges take place in various ways: from a Group-wide perspective when communicating with labor representatives, and from a more individual perspective through more targeted communication campaigns on topics ranging from knowledge of the business and aspects of corporate life to sustainable development initiatives.

Séché Day working groupe

HEALTH AND SAFETY **AT WORK**

Séché's Safety Policy within Séché Environnement is a core business component.

It is an integral part of the commitment made in connection with corporate social responsibility. It strives to protect the health of employees, subcontractors and communities living near the facilities.

It is expressed more specifically through the following:

- compliance with guidelines and their adaptation to the specific aspects of the waste, depollution and decontamination industries;
- the promotion of national or regional health campaigns and campaigns focusing on interprofessional good practices;
- the inclusion of the most recent scientific data on health impacts;
- the continuous search for innovative solutions for the prevention and protection of mankind and the environment;
- ongoing cooperation with stakeholders and, more specifically, occupational physicians and health, safety, and working conditions committees;
- the sharing of best practices, lessons learned within the group of its business units;
- the welcoming of disabled workers;
- the monitoring of the enforcement of national laws.

"94% OF WASTE TONNAGE IS PROCESSED AT FACILITIES CERTIFIED TO OHSAS 18001 OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT, ALL FACILITIES ARE CERTIFIED"

ACCIDENT FREQUENCY RATE (TF1)

OF ACCIDENTS AT WORK WITH ABSENCE (ATAA)

SALARIED EMPLOYEES **12.5**

- 7.5 pts relative to 2016

FULL-TIME EMPLOYEES AND TEMPORARY STAFF: **14.6**

67% OF FACILITIES HAVE NO EMPLOYEE ACCIDENTS AT WORK WITH ABSENCE

TF1 ACCIDENT FREQUENCY RATE, ZERO

+ 19 pts

relative to 2016

-5%

REDUCTION IN THE NUMBER OF ACCIDENT REPORTS, INCLUDING THE GROUP'S NEW ACQUISITIONS INCLUDED IN THE INCREASE IN THE NUMBER OF EMPLOYEES

2 236 DAYS LOST

EMPLOYEES AND TEMPORARY STAFF

- 23% relative to 2016

Emergency exercise in hostile environment

INTEGRATION INTO **LOCAL ECOSYSTEMS**

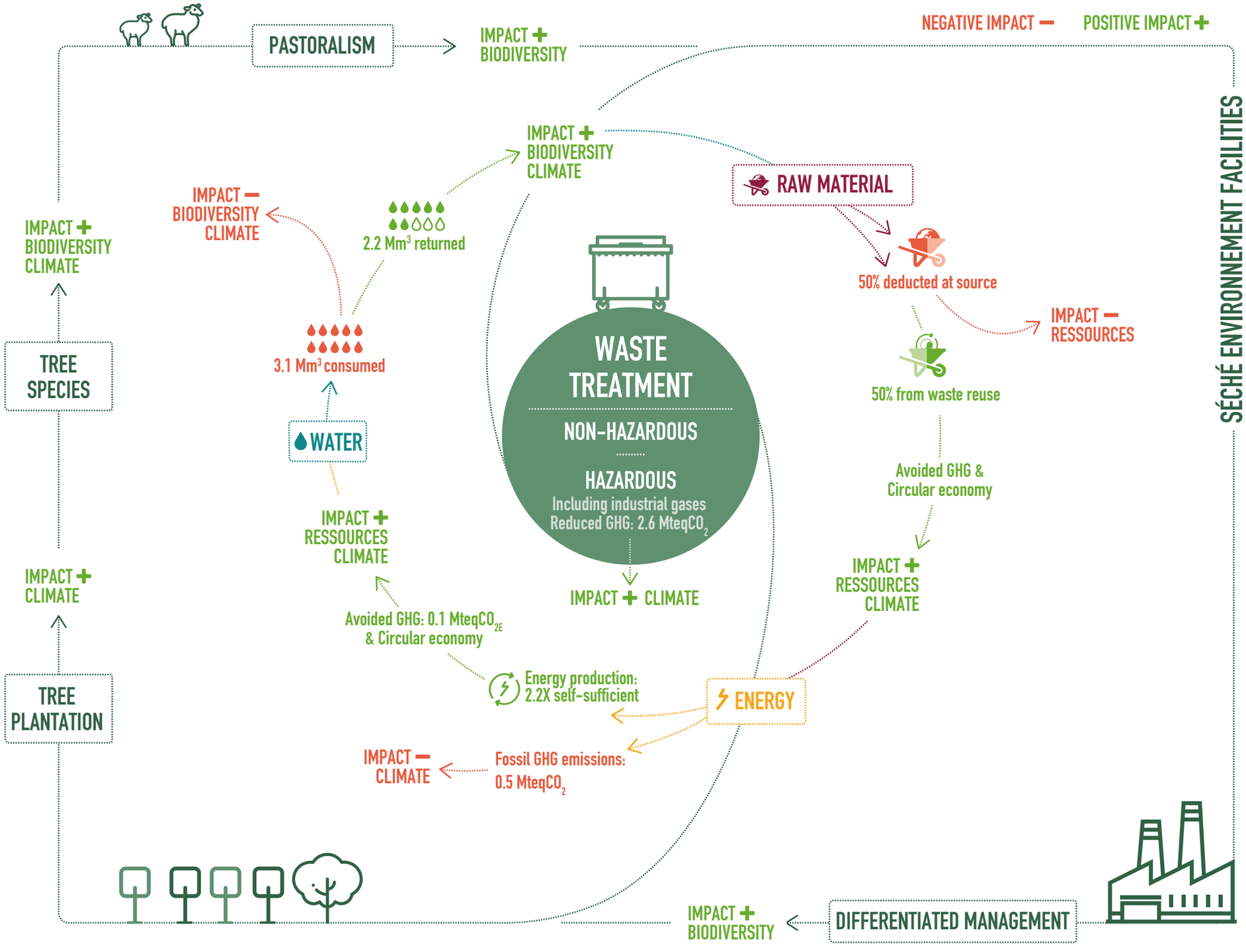
Differentiated management and pastoralism (France – Changé (53))

"TAKING BIODIVERSITY AS A PRIORITY AND A MAJOR ISSUE IS A MARKER OF SÉCHÉ ENVIRONNEMENT"

- Contribute to protecting biodiversity and natural environments by helping to reduce greenhouse gas emissions and working to preserve natural resources, mainly by recovering energy from waste.
- Protect the biological, hydrogeological and physical environments in which the Group operates.

CONSERVATOIRE de la CHARNIE
Elevons la biodiversité

ENVIRONMENTAL ISSUES AWARENESS



PRESERVATION OF NATURAL ENVIRONMENTS AND RESOURCES

SOUND AIR MANAGEMENT

Aside from greenhouse gases, the operation of incineration plants involves the release of gases and dust subject to very strict controls.

The volume and nature of atmospheric emissions depend on the level of activity (volumes treated), but also on the mix of waste received and its chemical composition, especially its content of sulfur, halogens and other molecules. The residual content of these substances remaining in chimneys after smoke treatment are strictly controlled by the company's operating licenses.

WATER RESOURCES PRESERVATION

Concerning the management of water (runoff and water from treatment processes), working areas are watertight, and water is collected and treated on site.

Most of the treated water will be re-used on site, either as process inputs (for stabilization), or for washing trucks, cleaning the site or watering landscaped areas. Aside from water used for sanitation, certain sites are self-sufficient (such as Changé) or return greater quantities to the natural environment than they consume (for example, the physico-chemical plant at Hombourg).

The aquatic environment receives discharges via special waste water treatment facilities into fast-moving watercourses. There is no discharge into sensitive environments or areas.

18 %
REDUCTION IN NET WATER CONSUMPTION IN 3 YEARS


Trédi Salaise


Trédi Saint-Vulbas

FROM

GROUNDWATER	80%
WATER SUPPLY NETWORKS	16%
SURFACE WATER, PURCHASED DE-MINERALIZED WATER	4%

3,162,000 M³ EXTRACTED

USED

95%	IN INCINERATION
5%	FOR OTHER PURPOSES

PROCESS WATER IS RECYCLED ON-SITE	5%

2,177,000 M³ RETURNED

69%	OF ALL WATER CONSUMED IS RETURNED TO THE NATURAL ENVIRONMENT
100%	RETURNED VIA A WASTE WATER TREATMENT FACILITY

A POSITIVE ENERGY BUSINESS

Energy recovery allows, in compliance with the hierarchy applicable to waste management, use of waste which was unable to be either recycled or recovered in the form of a material as a source of energy – renewable energy if its source is biomass (gas derived from landfill or half if the method is incineration of household refuse).

BIOGAS

Biogas (mainly methane) resulting from the fermentation of the organic fraction of waste is captured throughout the life of the landfill and is recovered in the form of renewable energy.

Biogas is converted to electrical energy using:

- turbines (Changé, Montech)
- motors (Sainte-Marie-Kerque, Le Vigeant, La Croix Irtelle, Montech)

and heat is recovered with the help of a pressure vessel.

Trédi Argentina (transformers recycling)

INCINERATION WITH ENERGY RECOVERY

The waste has enough calorific value to complete the combustion, and no additional fossil fuel (e.g. fuel oil, natural gas) is needed, except for heating up. As the reaction is exothermic, heat is recovered in a pressure vessel in the form of pressurized water vapor that is then expanded in a turbine generator set producing electricity. When feasible, this steam is also used to supply a local district-heating network or nearby industrial plants.

A necessary complement to the recovery of usable materials, energy recovery of SRFs allows identification of an outlet for non-recyclable waste other than landfill.

The process involves the direct oxidation of waste in a furnace which fully transforms its organic content into a totally inert form. There only remains a limited quantity of final residues for landfill storage with controlled toxicity (RPIFHW or RPIFIW flue gas cleaning residues, combustion residue and slag).

The technical design of the Group's plants depends on the type of waste to be incinerated at each site. In particular, the type and size of the furnace (rotary, fluidized bed or grate technology) for a given capacity are a function of the solid-to-liquid ratio and their calorific value

	RECOVERY METHOD		PORTION OF	
A POSITIVE ENERGY GROUP	Thermal	Electrical	RENEWABLE ENERGY	SITE'S CORE BUSINESS
Triadis Services Rouen	●			Haz. Waste incineration
Trédi Strasbourg	●	●		Haz. Waste + ORC incineration
Trédi Salaise	●	●	10%	Haz. Waste + Hous. Waste incineration
Alcéa Nantes	●	●	50%	Hous. Waste + ORC Incineration
Béarn Env. Pau		●	50%	Hous. Waste incineration
Séché Eco-Industries Changé	● ●	●	100%	Storage (biogas) + SRF
Séché Eco-Industries Le Vigeant	●	● ●	100%	Storage (biogas) + solar
Séché Eco-Industries La Dominelais	●		100%	Storage (biogas)
Séché Env. Ouest Croix Irtelle	●	●	100%	Storage (biogas)
Opale Env. Ste Marie Kerque		●	100%	Storage (biogas)
Drimm Montech-Escatalens		●	100%	Storage (biogas)
TOTAL ENERGY PRODUCTION	690 GWh		37 % Recovered energy	
TOTAL ENERGY CONSUMPTION	315 GWh			
ENERGY SELF-SUFFICIENT	219%			

- Boilers, turbines, motors
- ORC technology
- Solar
- Extracted energy

SAFEGUARDING OF NATURAL CAPITAL

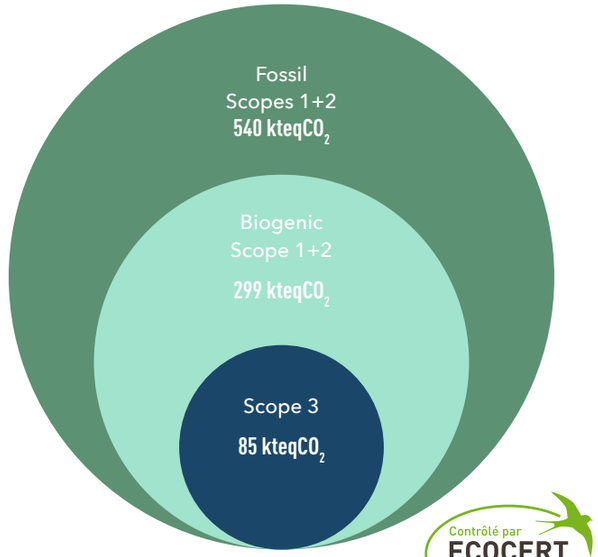
GREENHOUSE GAS (GHG) EMISSIONS

Scopes 1 & 2

The scope used to calculate greenhouse gas emissions (GHG) extends to all direct and indirect sources of GHG emissions associated with energy, i.e. Scope 1 emissions sources (emission of GHG whose source, whether stationary or mobile, is controlled by a corporation) and Scope 2 (emissions of GHG resulting from the generation of electricity, heat or steam imported and consumed by the corporation for its activities).

Scope 3

The determination of "significant GHG emissions generated by the activities of the company, notably by the use of the products and services which it consumes", within the meaning of Article 173 of the French Energy Transition Law, has made purchases of raw materials significant items.



Contrôlé par ECOCERT ENGAGEMENT CLIMAT

GREENHOUSE GAS (GHG) EMISSIONS

Séché Environnement cannot however set absolute environmental objectives for itself, since the Group's emissions and effluent depend on the quality and mix of the waste products it receives from its customers for treatment. This is particularly true for industrial waste, which tends to be more variable)

Speichim Processing - Beaufort

THE CARBON CYCLE

is a bio-geo-chemical cycle resulting from complex exchanges between the atmosphere, the oceans, living matter and mineral substances.

The short-term biomass carbon cycle

While it grows, biomass assimilates carbon by photosynthesis. Later, its natural degradation through putrefaction in the form of CO_2 and CH_4 naturally releases the carbon stored earlier: this is the short, or biogenic carbon cycle. In this natural, balanced cycle, the impact on the greenhouse effect of biogenic CO_2 is considered to be close to zero.

Consequently, it is generally admitted that carbon originating in biomass (biodegradable matter, cardboard, organic household waste, etc.) and re-emitted as CO_2 during waste treatment, has little or no impact on the greenhouse effect. The global warming potential (GWP) of CH_4, however, is much greater, and often attributable to human activity, for example the partly anaerobic landfill of waste, and must therefore be taken into account.

The very long-term fossil carbon cycle

The carbon contained in fossil matter was trapped in cycles of several million years in "geological reservoirs", practically without any further exchange with the atmosphere over several millennia. Burning fossil fuels or matter containing carbon of fossil origin, such as plastics, throws the "natural" carbon cycle out of balance, by injecting massive quantities of CO_2 and CH_4 into the atmosphere. It is a net addition carbon to the atmosphere on a time scale of around 100 years.

As a result:

Carbon of fossil origin contributes, on this time scale, to increasing the concentration of CO_2 in the atmosphere and has a decisive impact on climate change.

Biogenic carbon must be quantified separately, since it is considered not to have an impact on climate change. In the case of waste treatment, biogenic carbon comes from the fermentable component of waste.

MEASURES TO COUNTER CLIMATE CHANGE

GHGs avoided by generating energy from waste

The Group operates energy generating facilities and as such is the source of avoided greenhouse gas (Scopes 1 and 2). Producing the equivalent of electricity or heat from other sources, such as waste, would have required the consumption of a fossil fuel or at least would have emitted average CO_2 to generate 1 kWh of electricity, depending on the French energy mix.

GHG avoided in 2017 as energy recovery was 81 kt of CO_2 equivalent.

Treatment of industrial gases, GHG avoided and considerably reduced

Since the wake-up call about the impacts of emission of fluorinated and brominated gases on climate change, the regulations resulting from the 1975 Montreal Protocol and the 1997 Kyoto Protocol compelled industry to develop new molecules. As a result, it has been seen that for applications using refrigerants, CFCs have been gradually replaced by HCFCs, followed by HFCs and now HFOs. The recovery of the gases from equipment when it reaches the end of its life remains to be addressed.

Caring deeply about being part of the dynamics of sustainable development, the Group joined forces with a British partner to recycle and regenerate gas refrigerants, fluorinated gases, halons and SF6. By doing so, it is responsible for avoided **greenhouse gas (Scope 3) totaling 2.5 kt of CO_2 equivalent in 2017.**

The non-recoverable portion of these gases is treated at the Trédi facility in Saint-Vulbas, authorized to eliminate halons by incineration, freons and sulfur hexafluoride, considerably reducing their original global warming potential. **Greenhouse gases reduced in this manner totaled 2,638 kt of CO_2 equivalent in 2017.**

2 638 KTEqCO$_2$
GREENHOUSE GASES REDUCED


Gas treatment workshop, Saint-Vulbas (France (01))

Bearn Environnement (France (64))

LAND RECYCLING

Opale Environnement has started up recovery operations on waste excavated at a former landfill. This project meets the requirements of the French Law on Energy Transition which was passed in 2015 and which, in Article 100, makes provision for setting up experiments on the reversibility of waste storage centers.

Opale Environnement

This work is part of the RAWFILL Project under the INTERREG North-West Europe Program fostering transnational cooperation which aims at building a circular economy around the materials present in landfill. Its ultimate goal is to develop a European method for the assessment of the economic potential of landfill in order to stimulate the recovery of metals, raw materials and other buried recoverable materials.

RECOVERY OF WASTE GENERATED BY OPERATIONS

As Séché Environnement's business is waste treatment, the Group produces final waste which is merely what remains after treatment of the 2.3 million tons of waste it receives from its customers.

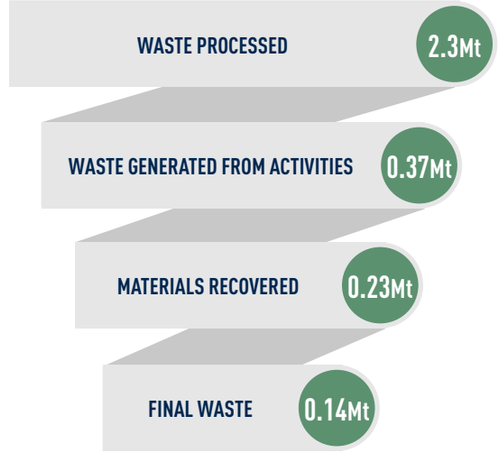
The success of the recovery of usable materials mainly depends on the quality of the sorting carried out beforehand on the waste received from customers. The quality of sorting by the waste producer is of the greatest importance but lies beyond the Group's control. For thorough and optimized sorting operations, the Group has built a number of non-hazardous waste sorting platforms, introducing a high degree of automation and state-of-the art technologies such as optical sorting and ballistic sorting.

For hazardous waste, the Group has set itself the priority of recovering energy and/or materials where possible (for example, chromic acid baths or sludge containing metals such as nickel, zinc or molybdenum). Regenerated solvents are included in these recovery operations.

Sorting center (France – Change (53))

FINAL WASTE

Hence, Séché Environnement does not itself generate waste, but rather treats waste, extracting value from it, reducing its volume and concentrating its hazardous nature into "waste from waste" or final waste which is then placed in secure landfill, insulated from any possible contact with the biosphere.



Tanks (France – Salaise (38))

DAY-TO-DAY BIODIVERSITY

THE GROUP'S COMMITMENT

Making the incorporation of biodiversity a priority and an imperative issue is a marker for Séché Environnement.

In the 1990s the Group brought its first ecologist-naturalist on board. This scientist responsibilities are to practice adapted management techniques, ensure the preservation of hedgerows and large trees, restore agricultural ponds, and, more broadly, to blend operations into the landscape.

Today most of these sites are certified by the Minister in charge of Ecology under France's National Biodiversity Strategy. In addition to the standard work under the initial assignment, new efforts in connection with biodiversity have been launched via art (an exhibition of the work of a nature artist), culture (nature walks with facility employees), education (collaborative projects with elementary and secondary schools), and field excursions with local naturalist associations.

The Group's commitment to managing biodiversity is reflected in the "ECOCERT" certification applicable to all sites of more than 10 hectares.

Contrôlé par ECOCERT ENGAGEMENT BIODIVERSITÉ

Raising employees' awareness to their environment (France - Changé (53))

THE MAIN POINTS OF BIODIVERSITY POLICY

Bug's house (France – Changé (53))

- **The preservation of areas of heritage significance identified at the design stage of the project**
- **The implementation of measures to monitor the maintenance of biodiversity**
- **Non-dissociation of landscapes and biodiversity**
  Integrating into landscape or renaturization programs those elements which can contribute to enriching biodiversity, paying particular attention to the choice of plants, shrubs, trees, and seeds (preferably endogenous).
- **The adoption of management methods suitable for application in natural areas, especially through adapted management techniques.**
  A tool to determine resources and timing for the maintenance of protected natural areas and nearby zones (late mowing, ecological engineering of ponds and watercourses, conservation of dead trees etc.). Pastoralism can be useful in policies of this kind, for example using Highland cattle to maintain wetlands, or goats to clear undergrowth from hilly areas which are hard for humans to access.

Species inventories and the monitoring of ecosystems

Identifying and assessing the value of an environment through its biodiversity must make it possible to reconcile as far as possible the management of natural areas with the management of areas for industrial or domestic use, mainly in activities that need large areas of land.

To this end, it is necessary to identify the different environmental pressures on the land, including those outside sectors that are classified Natura 2000, or that lie in natural regional parks or similar areas.

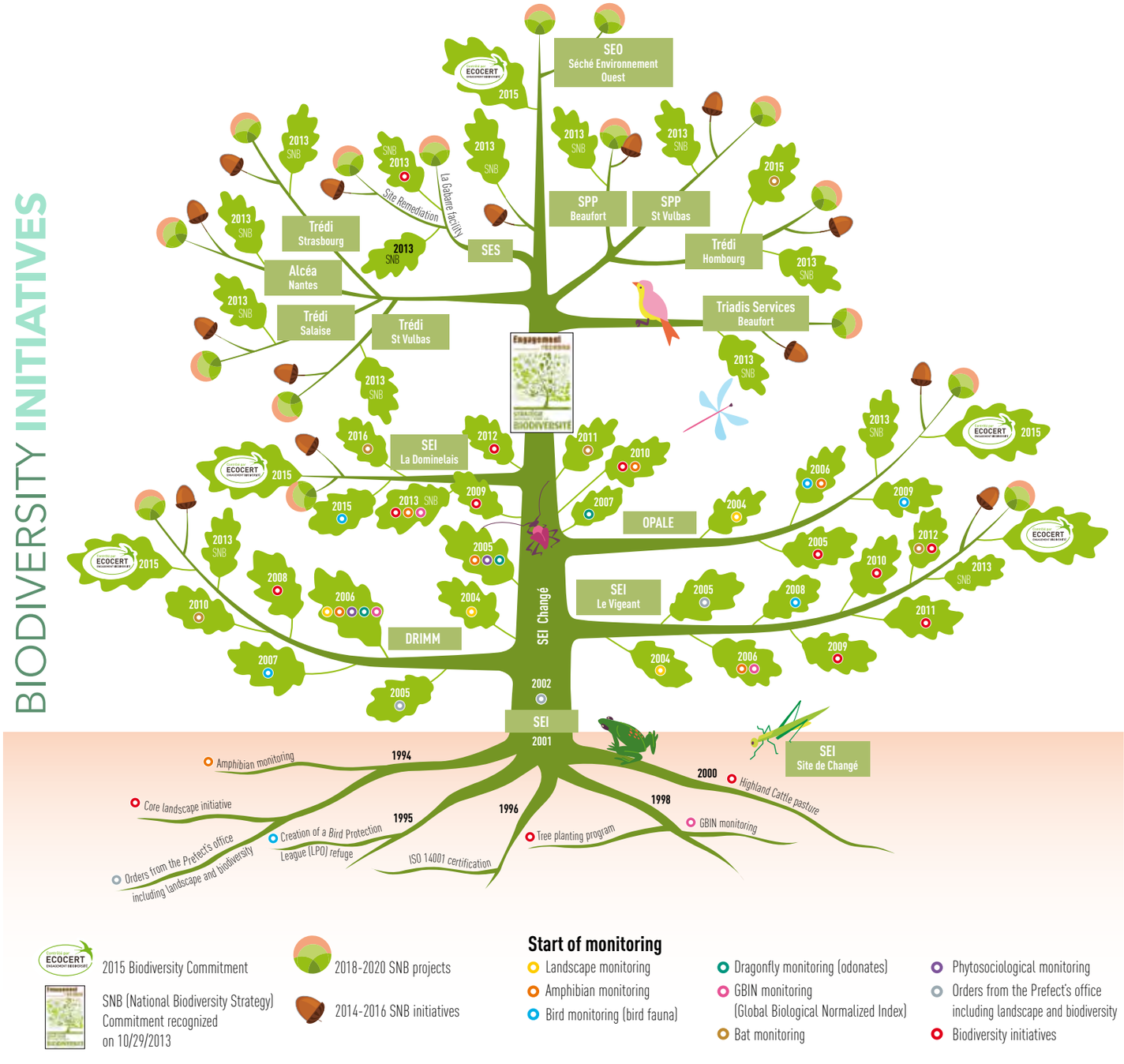
Biodiversity is right at the heart of human activity, and its protection needs to be a fundamental consideration in all human activity, as is the case for water or air emitted from industrial processes.

The eco-compatibility of plants, the choice of seeds and the restoration of wetlands are other factors that contribute to protecting biodiversity at the Group's sites.

The results of monitoring and wildlife censuses, such as those of bird fauna under the STOC program (temporal monitoring of common birds), conducted jointly with the French National Natural History Museum are testimony to the effectiveness of the measures adopted over the past ten years. In line with our aim of continuous improvement, new ecosystem monitoring programs for other fauna groups will be implemented in the near future.

Ecological continuity tools

The link which unites Séché Environnement with the biodiversity surrounding its sites is all the stronger because, as a significant landowner, the Group is able to implement coherent actions for the preservation and monitoring of animal and plant species. The fruits of these actions go beyond the neighborhoods of its own sites because of the exchanges which take place between one territory and another by means of so-called ecological corridors.



Biodiversity on our facilities

Engagement reconnu
STRATÉGIE NATIONALE POUR LA BIODIVERSITÉ

NATIONAL BIODIVERSITY STRATEGY (SNB)

The SNB is reflected in fulfilling the commitments made by France as party to the Convention on Biological Diversity (1992) and relates to the period running from 2010 to 2020.

The Convention sets as its aim "preserving and restoring, revitalizing and enhancing biodiversity by ensuring sustainable and fair use". The Law on the Recovery of Biodiversity, Nature and Landscapes has been the regulatory framework since 2015.

Séché Environnement's commitment to the SNA for 15 of its facilities was recognized by the Ministry for Ecology in January 2014, marking the launch of implementation of the Group's three-year action plan, which was completed in 2017 with more than 300 actions on the ground.

The Group's new commitment is fourfold

1. Place actions in favor of biodiversity in a continuum of space and time, stimulating progress widely throughout the subsidiaries of the Group
2. Make biodiversity a cause that will bring people together within the Group
3. Use biodiversity as a lever to invigorate stakeholders and customers
4. Develop people's interest in preserving biodiversity by means of an artistic or cultural approach

SYMBIOSIS WITH SOCIETY

Loreto (Peru – Amazonia) community center for "Nueva Esperanza" inhabitants

"THE DIALOGUE WITH STAKEHOLDERS IS AT THE HEART OF THE STRATEGY"

- Forge transparent relationships of trust with all economic and social players in contact with sites
- Position itself among players in economic and social development in areas where sites have been established (local industrial ecology)

SOCIO-ECONOMIC FOOTPRINT

The company evolves in an ecosystem where it interacts with its stakeholders. It has economic exchanges with the players in its territory and plays a role in its dynamic character.

Séché Environnement's facilities are major contributors to territorial organization by providing the regions with solutions for the recycling of their waste and by being part of industrial ecology. As such, their activities are part of the infrastructure in the areas where they are located, in the same way as tie-ins to the transportation system and power grid.

The Group is a direct stakeholder in employment, but also does business with its various suppliers, who are employers themselves. The contributions of the company to the regional authorities and the State provide funding for a portion of various public services, such as education, infrastructure, safety and healthcare.

However, these interactions are not only monetary. They are also cultural and sports-related for the women and men who comprise its workforce. They are a part of everyday life and harmonious living in the area.

SHARING THE WEALTH

CLIENTS
€534.5m

Contributed revenue for 2017 totaled €511.9m, for current operating income of €39.7m and net income of €15.4m.

Retained amounts
€67m

For the purpose of financing investments and honoring debt obligations

EMPLOYEES
€127.2m
Amounts paid to employees in the form of salaries, profit-sharing schemes and incentive bonuses, and social security contributions.

SUPPLIERS
€277.98m
Goods and services purchased from a number of often local suppliers.

SHAREHOLDERS
€7.2m
Shareholders were paid a dividend of €0.95/share (gross).

BANKS
€13.6m
The net amount of financial expenses paid to lending banks

GOVERNMENTS AND COMMUNITIES
41,5 M€
Contribution to the public budget in the form of income tax and other taxes.


Kanay's kiln inauguration by Elsa Galarza, Peruvian Environmental Minister

Changé's SRF kiln inauguration by Bruno Lechevin, ADEME President

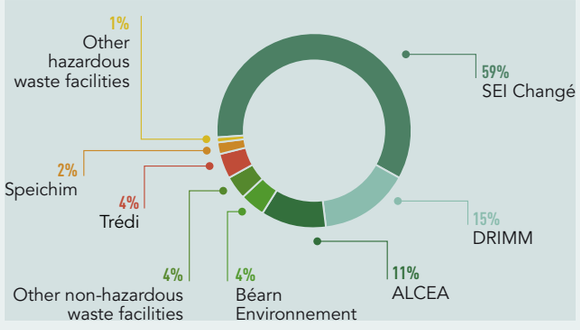

Biodiversity Day, Trédi Salaise (France (38))

A BUSINESS AT THE HEART OF JOB CATCHMENT AREAS

BE AN INDUSTRIAL TOURIST

Welcoming visitors to our sites is not just a way of getting to know the people and communities we work with. It is also about openness, which drives Séché Environnement's culture. It is also a first concrete information and training initiative. Showing the pride that employees have in their workplace and how waste is processed, and the resources it contains provided it is correctly processed upstream are examples of education put into action.

MORE THAN 11,000 VISITORS WELCOMED IN 2017




Alcea facility tour (France – Nantes (44))

ACT FOR EMPLOYMENT

Getting people back into employment

A true laboratory for ideas and methods, FACE, an association that stands against exclusion, fights against exclusion in all its forms on a daily basis. Its expertise takes the form of actions taken by the company in support of employment, education and culture involving hundreds of thousands of recipients on a daily basis and across all regions.

Opale Environnement plays a direct role in these activities to foster the return to employment through FACE and works alongside the association to contribute to the smooth operation of a recycling depot based on the principle of inclusion to which it lends its expertise.

EXPLORE OUR PROFESSION

Mondial des Métiers

The Group participates in the *Mondial des Métiers* careers fair in Lyon, a unique forum for the exchange of ideas among educators, businesses and anyone wishing to explore their prospects for employment. In 2016, more than 120,000 visitors were welcomed at the fair, which places the emphasis on apprenticeship.

The task of showcasing careers and answering young people's questions fell to the representatives of Trédi and Speichim, who set up shop in the fair's Rhône-Alpes Chemistry Village where they focused on careers in production, research and maintenance and explained the diversity of professions in the field of chemistry.

15 PEOPLE UNDER WORK-STUDY CONTRACTS AND 2 UNDER EMPLOYMENT INITIATIVE CONTRACTS IN 2017

Science Fair

For the 2017 edition in the Auvergne-Rhône-Alpes region, more than 160,000 visitors, including 50,000 schoolchildren, participated in 1,300 activities, including some offered by Trédi in the field of chemistry.

INCLUSION IN SOCIO-CULTURAL ACTIVITIES

PUT ON YOUR RUNNING SHOES, RUN IN LYON IS BACK!

In the mood for a challenge and a chance to represent the company? The Séché Environnement "Run in Lyon!" team, which includes runners from Speichim Saint-Vulbas, Trédi Saint-Vulbas and Trédi Salaise, whether experienced runners or beginners, did it.

Well done for participating in this great human and sports endeavor!

An excellent team-building experience.

32
PARTICIPANTS

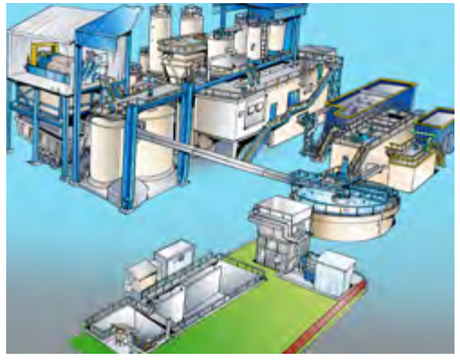
TRAVEL SMART

The Nord-Isère Chamber of Commerce and Industry, the CCPR and INSPIRA are currently working on establishing an Inter-Enterprise Commuting Scheme ("PDIE").

This plan aims at improving commuting conditions across the region and proposing alternatives to the use of a private car. Trédi Salaise is one of 19 businesses participating in the Inter-Enterprise Commuting Scheme, now known as Mobil'ID. Surveys conducted from March to May 2017 led to the formulation of an action plan:

- Communicating about the existing carpooling scheme (Covoit'Oura) and creating a sub-group reserved to employees in the area.
- Giving feedback to the communities involved in potential improvements to infrastructures to reduce the accident rate.
- Optimizing public transport services in the region.

INSPIRA
ESPACE INDUSTRIEL RESPONSABLE ET MULTIMODAL



GETTING TO KNOW WATER THROUGH OPERATION "EAUX SECOURS"

An event organized by Salaise Town Hall, Operation "Eaux Secours" is designed to raise awareness about the conservation of aquatic environments and water resources focusing on the following themes:

- the uses of water
- the protection of water resources
- water treatment/monitoring aqueous waste
- raising the awareness of employees

SEE A PLAY

Nuits de Fourvière Festival

The winners of a quiz based on sustainable development won seats to attend the Nuits de Fourvière Festival in Lyon, of which Séché Environnement is a corporate sponsor.

Salaise Jazz Festival

VIENNE ELECTRIC CAR RALLY

The Vigeant plant participated in this rally, designed to highlight the heritage, landscape and tourist attractions of Vienne. SEI, a producer of renewable energy, had to be there!

BIODIVERSITY BEYOND THE WALLS

BEEKEEPING AND MARKET GARDEN INITIATIVES

Apiaries at Saint-Vulbas

The idea of an inter-enterprise apiary came into being among the businesses of the Plaine de l'Ain Industrial Park who were fascinated by it but for whom creating an apiary on their site was too restrictive (facilities governed by the Seveso Directive, regulated access, and company image concerns).

The alternative of locating the apiary in a common area managed by the Park's joint association allowed it to be shared among several businesses and to work in cooperation with a beekeeper, who would provide the hives and provide monthly maintenance, and with Naturama, an association dedicated to improving the relationship between mankind and the environment out of concern for protecting nature.

Once the honey is harvested, a jar is given to employees who correctly answer a nature quiz.

Grafting plants at Changé

Each year, the Confrérie de la Bolée de la Concise introduces employees to their grafting techniques. This training is aimed at promoting the conservation of old species.

DISCOVERY TOURS

The Montech, Changé, Sainte-Marie-Kerque, Beaufort and other facilities open their doors

To staff and their families and to people outside the company, both day and night, visits giving them the opportunity to explore the wealth of biodiversity on the site of our facilities and to make our guests aware of requisite conservation initiatives. A series of days dedicated bringing together the liaison officers of the National Biodiversity Strategy for exchanges of experience and the sharing best practices.

Analysis and conservation training

The Conservator of the Ile de la Platière Nature Reserve (near Salaise) trained members of the plant's Nature Club on how to ensure successful plantings:

- Soil studies and reading soil survey maps
- Better knowledge of the local weather conditions
- Selecting the vegetables that can tolerate these conditions
- Adopting the best cultivation techniques

ART AND BIODIVERSITY

Sculptures at Changé

Paintings at Montech

The Art Plastique Garonne Canal association has adopted drawings and paintings of the site's biodiversity at a theme.

INSIDE AMAZONIAN COMMUNITIES

The project in the Amazonian jungle on behalf of the Peruvian state-owned petroleum company involves the decontamination of a local stream and its banks impacted by hydrocarbon leaks from pipelines dozens of kilometers long.

Local personnel are trained and employed for this purpose.

Nature's harshness and the remoteness of its aboriginal populations led to support of a community assistance program reflected in:

- the construction of two schools and a community center for the people living in Nueva Esperanza in the Loreto region, from which more than 100 families will benefit;
- medical and dental campaigns for children, including raising awareness about good hygiene practices;
- awareness-raising workshops on recycling and environmental protection through the use of films and puppet shows and the construction of a "Biohuerto", a vegetable garden with regional products to contribute to the community's self-sufficiency;
- and a number of sports and festive activities to strengthen ties with the local community.

RESEARCH IN THE SERVICE OF **THE CIRCULAR ECONOMY**

"A MULTIDISCIPLINARY APPROACH INTENDED FOR APPLICATION"

Through its research policies, Séché Environnement is heavily involved in the development of green innovative technology, built and deployed along three strategic axes:

- continuous improvement of existing processes and mitigating their impacts
- extraction of resources from waste, including secondary raw materials and/or energy
- ensuring safety and preventing potential harm from final waste

RECYCLE TO REDUCE **DISPOSAL**

SELECTIVE EXTRACTION OF THE CONSTITUENTS OF CONCRETE WASTE

Finding

The decommissioning of nuclear power plants produces radioactive wastes involving the above-ground storage sector. The 2015 National Inventory of Radioactive Waste predicts 1,137,000 m^3 of very-low-level radioactive waste (VLLW) by 2030, of which more than 40% would come from decommissioned plants.

In order to optimize the use of its storage capacities, the National Authority for the Control of Radioactive Waste (Andra), conducted a study of the feasibility and technical-economic advisability of recovering a portion of the demolition rubble at its waste repository named CIRES.

The program

Lasting three years (2017-2020) and funded by ANR-Andra, the program aims at developing a treatment solution for rubble containing VLLW that would allow recycling by the nuclear industry to make concrete. This program is being coordinated by Séché Environnement in partnership with the French Geological Survey ("BRGM") and SAIREM (a manufacturer of microwave industrial equipment) and proposes:

- Studying the selective separation of the constituents of concrete (aggregate, sand and cement paste) thanks to pre-process microwave breakdown, selective soft crushing and sorting by particle size and density.
- Decontaminating aggregate and sand by a microwave separation process in order to obtain materials having the same quality as fresh materials and therefore readily usable.
- Recycling the stabilized cement paste immobilizing the radioactive waste, especially Low Radioactivity/Medium Radioactivity wastes, thanks to microwave heating, which vaporizes some of the water in its structure and reactivates the pozzuolanic properties of the cement paste.

Progress

One year after launch, the project is in the passive testing stage on the laboratory scale. The first results are encouraging and confirm the positive effect of the microwaves on the selective separation of the original constituents of the concrete.

PRODUCTION OF USEFUL MOLECULES FROM DISCARDED FURNITURE

The objective

The VADEBIO project, co-funded by ADEME, Eco-mobilier and Valdelia, is aimed at developing a process producing sweet juice from wood derived from discarded furniture parts ("DEA") by treating the primarily wood components, i.e. the cellulose and hemicelluloses, by enzymatic hydrolysis. However, the presence of substances such as paints and glues inhibits enzyme activity.

Extruder screw for wood treatment

Treated wood - Decanter output

Program and progress

Séché Environnement has partnered with Protéus specialized in industrial biotechnologies), Valagro (a private laboratory specializing in recycling chemistry) and its subsidiary, Eco-Ethanol (pilot unit dedicated to the use of biomass) to:

- Identify non-toxic, environmentally friendly green solvents for operators in order to extract pollutants and define the best conditions for pre-processing wood to increase the yield of enzymatic hydrolysis. This line of investigation helped define the steps of the process and compared several extraction methods.
- Finding strains of bacterial or enzymes to degrade inhibiting pollutants or whose activity is not impacted by these pollutants. Out of the 29 strains that might be developed by using DEA as the sole source of carbon, five were used (one to reduce the inhibition of beta-glucosidase, an enzyme essential for hydrolysis and four others, in addition to the cocktail of cellulolytic enzymes).
- Building an enzyme or strain model that would resist pollutants during hydrolysis: Optimizing beta-glucosidase to make it resistant to all the inhibitors present in paint or glue on waste wood. It might be possible to then add these enhanced enzymes to commercial formulations currently being used for the enzymatic hydrolysis of wood and which are appropriate for DEA.

CREATING BIO-SOURCED **PRODUCTS**

SymBIO$_2$

THE RECOVERY OF GENERATED HEAT AND THE PRODUCTION OF USEFUL MOLECULES

The program

The SymBIO$_2$ Project proposes to grow micro-algae within a "bio-facade" system (FUI 15), by taking full advantage of the thermal and chemical exchange with the host building. It involves producing, in a sustainable and profitable manner, an algae biomass for applications other than energy, including the extraction of recoverable molecules of interest to the cosmetics, food and animal feed industry.

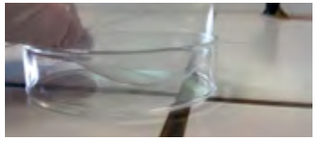
Accordingly, the goal of the project is to improve the environmental quality of the building (energy efficiency, capture of CO_2, recovery of effluent, reducing heat islands, reducing urban sprawl, short cycles) and offering an alternative cost-saving solution for the agricultural sector where current development has been curtailed due to extremely high cost prices.

Progress

Séché Environnement, as a member of the SymBIO$_2$ consortium, has been exploring this route for several years with a view to recovering generated but not yet used heat and to produce micro-algae, which represents a promising source of natural ingredients. A pilot study of 200m^2 of biofaçades is underway at the Centre Scientifique et Technique du Bâtiment (C.S.T.B.) in Champs-sur-Marne.

BluEcoPHA

PRODUCTION OF BIODEGRADABLE BIOSOURCED PLASTIC FOR PACKAGING



Finding

Single-use plastic bags with a thickness of less than 50 microns are prohibited (2016) and the Act Respecting Energy Transition for Green Growth stipulates that disposable plastic cups, cutlery and plates will be completely prohibited by 2020, unless they are compostable and partially or entirely biosourced. It would therefore appear necessary to develop new plastic materials, including bacterially derived polyesters

The program

Championed by four manufacturers (Europlastiques, CAP Ouest, Séché Environnement and Triballat) and two public research teams (UBS-LIMATB and ENSCR-CIP), funded by ADEME the project is in keeping with the prospect of developing innovative biosourced polymers for the packaging sector.

Progress

The special characteristics of polyhydroxyalkanoates (PHA), such as their transparency, relative flexibility, and gas barrier properties make these polymers the ideal candidates for a number of applications, first and foremost packaging, which today represents the largest market for plastics.

However, many obstacles remain to be overcome before PHA truly becomes a polymer of the future, as the production cost remains high, especially in comparison to conventional plastics. Furthermore, it is necessary to ensure respect for the environment throughout the entire production chain, whether during the fermentation phase and in particular during the extraction phase, which must be carried out by limiting the use of organic solvents to the maximum extent possible.

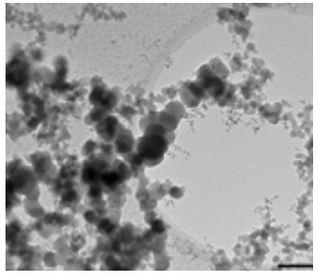
CONTROLLING INDUSTRIAL **PROCESSES**

NanoWet — BETTER CONTROL OF POTENTIAL NANOPARTICLE EMISSIONS FROM THE END-OF-LIFE INCINERATION OF NANOMATERIALS

Finding

The number of products containing nanoparticles is growing steadily. In France alone, more than 300,000 tons were produced and more than 120,000 tons were imported in 2016.

The end-of-life of manufactured nanomaterials must occur under the best possible safety conditions, in particular during incineration. NanoWet focuses on the control of flue gas cleaning using wet technology and follows up NanoFlueGaz, which used dry technology.



The program

In order to address the health and environmental concerns potentially raised by the incineration of nano-waste, NanoWet is interested in their treatment in the specialized High-Temperature Incineration sector to which waste containing organohalogens and/or sulfur are directed.

The consortium, under the auspices of ADEME, comprised of IMT ATLANTIQUE NANTES, INERIS and Trédi – Séché Environnement has set four major targets:

- Characterizing the emissions of nanoparticles in untreated effluents resulting from high-temperature incineration.
- Collecting data on particle emissions under real-world operating conditions at an industrial facility.
- Evaluating the effectiveness of gas-washing towers on submicron-sized and nano-sized aerosols.
- Eliciting recommendations on the treatment of nano-waste by incineration with a view to minimizing the associated risks.

Salaise (France (38)) test site

> “FURTHERMORE, THIS STUDY WILL INVESTIGATE THE ASSOCIATED CAPTURE AND CONTINUOUS MONITORING OF EMISSIONS.”

Measurement instrumentation

Alcea (France (44)) test site

MiMOSA — THE FATE OF MERCURY IN THE INCINERATION OF MERCURY-CONTAINING WASTE: MEASUREMENT, SPECIFICATIONS AND THE IMPACT ON THE EFFECTIVENESS OF MERCURY ABATEMENT

Finding

A 2014 RECORD study found that the processes associated with the fate of mercury (Hg) in fuel-fired waste solutions remains to be worked out in connection with changes to the mercury standard based on the compartments of the waste-to-energy (WtE) power plant in relation to the respective roles played by temperature (very critical at temperatures around 300°C), the amount of oxygen and the molecules present in the environment (in the context of chemicals).

This project supported by ADEME is consistent with expectations of a lowering in the level of mercury emissions from WtE power plants, including the prospects for a continuous measurement requirement.

The program

MIMOSA involves industrial research based on real-world experimentation.

Reliable continuous measurement of mercury species present at three points of the WtE power plant (speciation), namely:

- upstream of the baghouse
- upstream of the SCR reactor
- during dewatering,
- combined with continuous analysis at the same points of O_2, HCl, H_2O and SO_2

it will allow the determination of the atmosphere in each compartment in relation to the different mercury species present and in doing so learn about the physico-chemical operating conditions necessary for the environmental control of mercury.

The data collected will be used and the mechanisms of the transformation of mercury inside the different compartments of the WtE power plant should be explicitly set out in conjunction with local thermodynamic conditions. Thermochemical modeling will then be used to correlate the data collected in the field and the assumptions made concerning these mechanisms.

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