



**CORPORATE
SOCIAL
RESPONSIBILITY
INFORMATION
2018**





Aggregate mining in Saint-Jean-le-Vieux in Ain, France



Corporate Social Responsibility Information 2018

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MESSAGE FROM THE CHAIRMAN AND CEO



There is simply no alternative to cement to meet the need for construction materials in the years to come.

Guy SIDOS



Invented by Louis Vicat 200 years ago, is cement still a material of the future?

There is simply no alternative to cement to meet the need for construction materials in the years to come. Given the scale of population growth, cement, that is locally produced, is simply the only material available in sufficient quantity and at a sufficiently affordable price.

The manufacturing and usage of this material that has brought quality housing to so many people and provided protection and comfort to users for two centuries is changing in line with sustainable development policies and circular economy principles.

As the only French cement group, what are the advantages of the Group's family identity? What is the secret of its longevity?

Seven generations of family entrepreneurs have successively held the reins since artificial cement was invented in 1817, guiding the Vicat group along a path of consolidation, vertical integration and international expansion.

Each generation has successfully adapted the company to the contingencies of the times and nurtured it with passion before passing it on to the next generation, ever respectful of the admirable work of the Group's equally passionate employees, without whom this growth would not have been possible.

In a global environment where business cycles in different countries are not necessarily synchronized, our model brings resilience through geographic diversification.

The Group now operates in 12 countries, what are your international expansion priorities?

The Group's international expansion dates back close to 45 years, when we took our first steps in the United States. Now operating in five geographies (Europe, the Americas, West Africa, the Mediterranean and Asia), the company is pursuing growth in emerging countries, where demand for construction materials will be the strongest in the coming years.



We take a proactive approach to sustainability, making it an integral part of the Vicat Group's overall strategy.

In some countries, the Vicat group has developed complementary activities to its three core businesses (Cement, Concrete and Aggregates), which enable it to develop synergies, optimize production costs and improve customer service: construction chemicals, prefabrication of concrete products and transportation of materials are complementary activities that add value to our products. Together, they represented 15% of the Group's sales in 2018.

What is your view of the Group's performance in 2018?

The last year saw the resumption of our external growth with the acquisition of Brazilian cement producer Ciplan. This acquisition gives us a foothold in South America, a continent with great potential.

We are pursuing our balanced development strategy, which allows us to weather the economic turbulence of our unstable world by spreading the risks geographically. This reinforces our Group's long-term stability.

Vicat's 2018 results are stable, despite considerable volatility in currencies stemming from geopolitical tensions.

For instance, in the summer, the tremendous momentum of the first half of the year in Turkey was halted by the sharp depreciation of the lira in August.

Overall, the year's results are satisfactory, but paint a contrasting picture depending on the country, with growth notably in France, the United States and Kazakhstan.

How would you describe the Group's approach to sustainability?

We take a proactive approach to sustainability, making it an integral part of the Vicat Group's overall strategy. Action taken to reduce the drain on natural resources, to encourage the recycling of construction materials and to promote waste as an energy source are key parts of the process.

Our cement plants are links in the short chains of circular economy. More than 20% of the cement coming out of our plants is derived from the transformation of waste formerly stored in landfills. The latter is now being reused for the energy it provides, replacing fossil fuels, or for the raw material it represents. We have launched the "Vicat Circulère" offer in France to extend this know-how. The proper use of raw materials and the recovery of waste are becoming more widespread thanks to this determined, responsible and profitable approach.

At the same time, the Group is committed to promoting biodiversity and safeguarding ecosystems in its host communities. We have acquired expertise in the redevelopment of our quarries, not only during the operational phase, but also at the end of their lives.

All this is made possible by the attention paid to relations with stakeholders, both external and internal. We firmly believe that that this environmental industrial approach will be supported by our customers.

Ever since the days of Louis Vicat, innovation has been one of the keys of Vicat's success.

What are the priorities of your innovation strategy?

Our R&D focuses on the performance of our materials, the environment, the ease of use of our products and restrained used of resources.

The Vicat group works across the entire spectrum of the construction system, including sustainable urban mobility ("Transpolis" laboratory city), biodiversity ("Odyssey" project), connectivity, 3D printing, concrete solar collectors, quick repair solutions for roads and building insulation.

The ultimate goal of innovation in construction is to rethink housing and cities, and to invent accessible new models of cohabitation and mobility that are respectful of the environment and biodiversity.



The Ciplan cement factory, near Brasilia, in Brazil

PRESENTATION OF THE GROUP

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1.1. Profile

The Vicat Group has real know-how in the Cement, Ready-mixed Concrete and Aggregates businesses, and was born with the invention of artificial cement by Louis Vicat in 1817. This tradition of innovation and technical excellence has continued over two centuries through research, discoveries and participation in countless buildings and complex civil engineering structures.

Cement is the Vicat Group's "core business": in 1817, Louis Vicat invented artificial cement and in 1853, his son Joseph Vicat built the Group's first cement plant. This business accounted for more than 49% of the Vicat Group's consolidated sales revenues in 2018.

The Group's industrial and commercial expertise, together with its strategic model for long-term development, backed by its shareholders and a management presence by members of the founding family since the Company's formation, have made the Group a regional leader in the 11 countries where it operates across Europe, North America, Asia, Africa and the Middle East. At the start of 2019, the Group established a foothold on a new continent with the acquisition of cement manufacturer Ciplan in Brazil.

Beginning in 1974 with the acquisition of a cement factory in the United States, the Group's international expansion has continued since then at a pace sustained by its strong operating cash flow, with debt kept

firmly under control. The Group doubled its overall cement production capacity between 2006 and 2012, with a strong focus on the emerging countries. The portion of consolidated sales revenues generated outside France has risen steadily and rapidly, from 43% in 2000 to 63% in 2018 (including 32% in emerging countries).

Wherever justified by market conditions, the Group pursues a policy of vertical integration into Ready-mixed Concrete & Aggregates, which accounted for 38% of consolidated sales revenues in 2018.

The Group also benefits from synergies with complementary activities (Precast Concrete Products, Construction Chemicals, Transport, Paper and Bags businesses) carried on in certain markets to consolidate its range of products and services, and to strengthen its regional positioning.

€**2,582** M
sales revenues

8,684
employees

3 business segments
Cement,
Concrete & Aggregates,
Other Products & Services



Vicat has a presence in South America in Cement, Concrete & Aggregates, having finalized its acquisition of a majority shareholding in Ciplan in Brazil in early 2019.

12 countries
where Vicat
operates in 2019
with Brazil

22.8
million tonnes
of **cement**

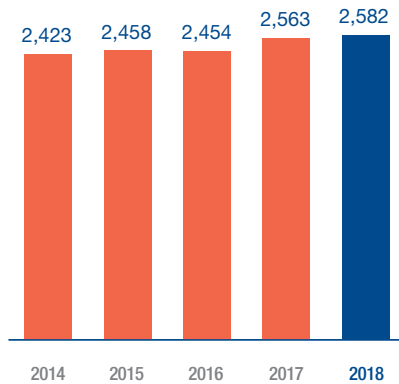
9.0
million m³
of **concrete**

22.7
million tonnes
of **aggregates**

1.2. Key figures

SALES REVENUES

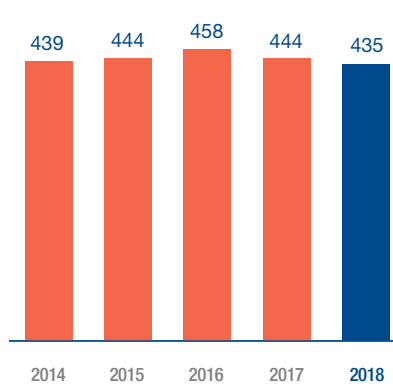
(in millions of euros)



Consolidated sales revenues for 2018 were € 2,582 million, up 0.7% and 5.9% at constant consolidation scope and exchange rates compared with 2017.

EBITDA^(*)(1)

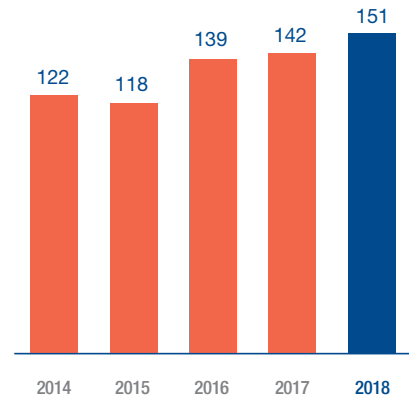
(in millions of euros)



Group consolidated EBITDA, at € 435 million, was down 2.2% compared with 2017 but up 2.7% at constant consolidation scope and exchange rates.

GROUP SHARE OF NET INCOME^(*)

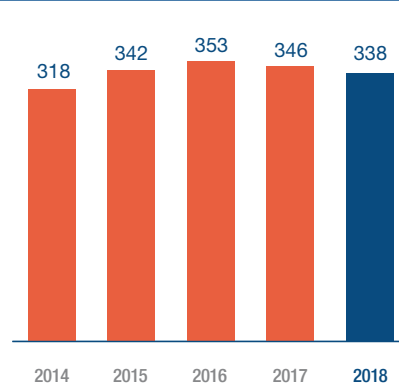
(in millions of euros)



Consolidated net income, group share was € 151 million, up 12% compared with the 2017 result at constant consolidation scope and exchange rates.

OPERATING CASH FLOW^(*)

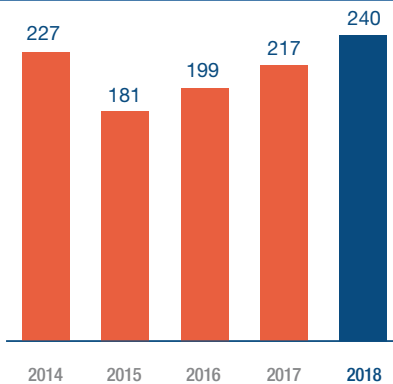
(in millions of euros)



Operating cash flow amounted to € 338 million, generating free cash flow of € 167 million in 2018.

TOTAL INVESTMENTS^(*)

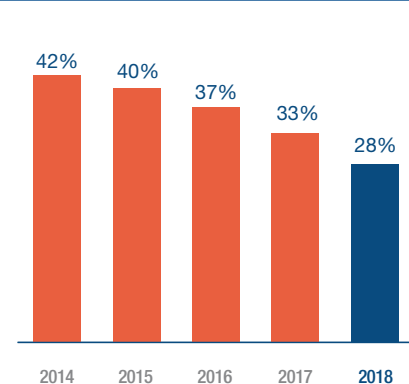
(in millions of euros)



Investments in 2018 amounted to € 240 million, following the same trend as the past four years, in accordance with the Group's strategy.

NET DEBT/EQUITY

(in %)



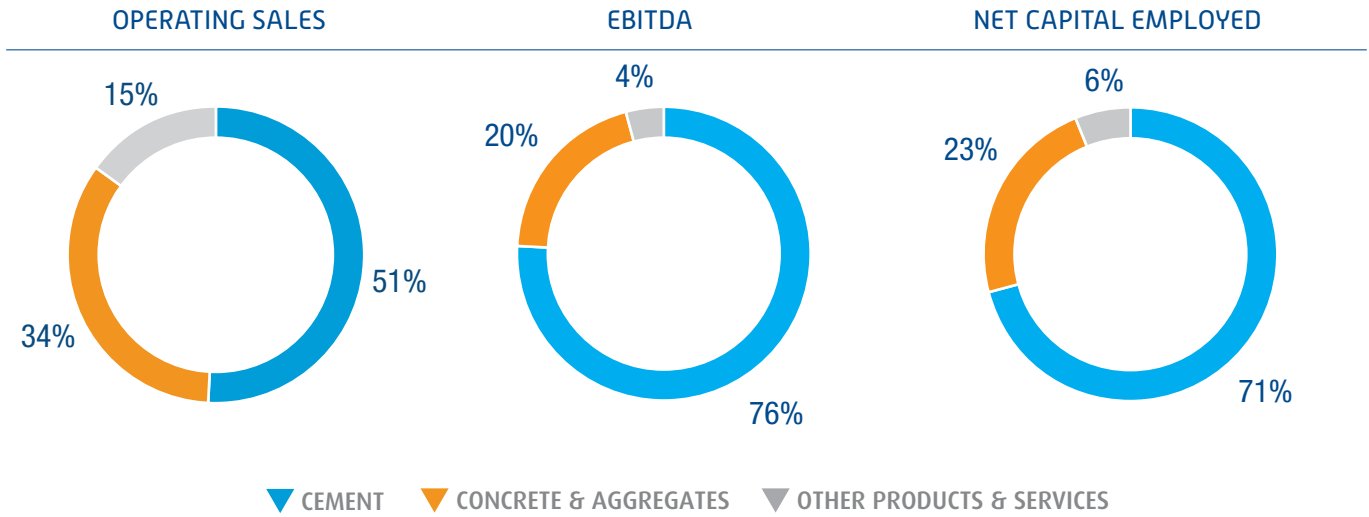
The gearing ratio ⁽²⁾ was 27.8% of the consolidated shareholder's equity as at December 31, 2018, compared with 32.7% as at December 31, 2017.

* Figures for 2014 and 2015 have been restated in accordance with the new accounting method applied to greenhouse gas emission rights. The nature of these restatements is explained in note 1.7 to the consolidated financial statements.

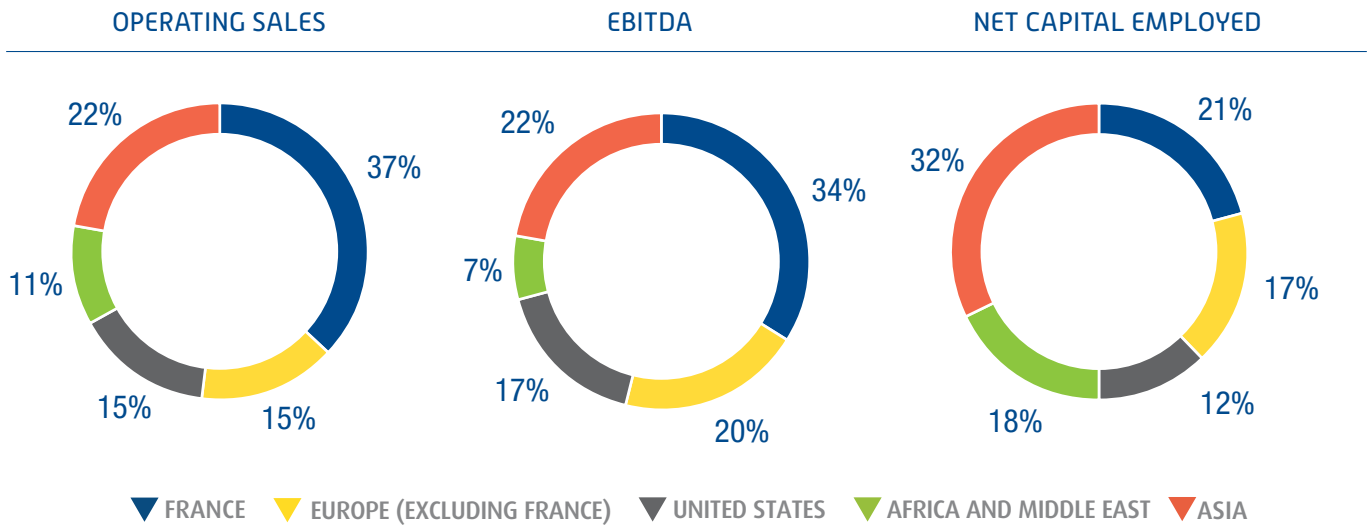
(1) EBITDA (Earning Before Interest, Tax, Depreciation and Amortization): gross operating income plus other ordinary income and expenses.

(2) Gearing is a ratio analysing the financial structure and is equal to net debt divided by consolidated shareholders' equity.

BY BUSINESS SEGMENT (2018)



BY GEOGRAPHICAL AREA (2018)



1.3. History

1817

Louis Vicat invented artificial cement

After graduating from two of France's elite engineering schools, Ecole Polytechnique and Ecole des Ponts et Chaussées, Louis Vicat invented artificial cement in 1817. On February 16, 1818, his invention was authenticated by the Académie des Sciences. The report was signed by Mssrs. de Prony, Gay-Lussac and Girard, distinguished scientists of the time.

1853

Construction at Le Genevrey of the Group's first cement factory

In the vicinity of Grenoble the young engineer Joseph Vicat began to manufacture artificial cement in kilns, after analyzing the local argillaceous limestone and finding it particularly well suited to this task. The initial results were highly satisfactory. Aged 32 at the time and a graduate of the Ecole Polytechnique like his father, Joseph Vicat soon decided to build a cement factory at Le Genevrey, near the town of Vif in the Isère department.

1875

Construction of the La Pérelle factory for the manufacture of quick-setting cement

After tireless and rigorous exploration and testing, Joseph Vicat found deposits of limestone particularly suited for the manufacture of quick-setting cement in the Chartreuse mountain range and built a factory for this purpose at La Pérelle, near Saint-Laurent-du-Pont, to the north of Grenoble.

1922-1929

Construction of the Montalieu and La-Grave-de-Peille factories

Joseph Merceron-Vicat started building the Montalieu factory in 1922 and the Grave-de-Peille factory in 1929. The production capacity of the Montalieu site increased steadily over the ensuing years, becoming the Group's main cement factory in Europe. Today, Montalieu is among Europe's largest cement factories and remains one of the Group's flagship facilities.

1960-1974

Development of the Group's Cement business in France

At the end of the 1960s and during the 1970s, André Merceron-Vicat worked hard to promote the Company's vigorous development:

- 1968 Construction of the Créchy cement factory in the Allier department of central France;
- 1969 Acquisition of the Xeuilley cement factory (Meurthe-et-Moselle, Lorraine);
- 1970 Acquisition of Ciments de Voreppe et Bouvesse in the Isère department;
- 1970 Acquisition of Ciments de la Porte de France (Saint-Egrève, Isère);
- 1972 Absorption of Ciments Pont-à-Vendin, based in the Pas-de-Calais department of northern France;
- 1974 Acquisition of Ciments Chiron (Chambéry, Savoie).

The Vicat Company became France's third-largest producer of cement.

1974

The Group began to expand abroad, focusing initially on the United States

The Company expanded its presence into foreign markets, acquiring the Ragland cement factory in Alabama in 1974.

1984

Jacques Merceron-Vicat was appointed as Chairman and Chief Executive Officer of the Group

1980-1990

Vertical integration in France with the development of the Group's Concrete & Aggregates businesses

In France, the Group continued its development with the acquisition of the SATM Group (Transport, Concrete & Aggregates) and of a number of companies active in Ready-mixed Concrete & Aggregates, thus gradually building up a network of concrete batching plants and quarries in the Île-de-France, Centre, Rhône-Alpes and Provence-Alpes-Côte d'Azur (PACA) regions.

1987

Acquisition of the Lebec factory (California, United States)

Located near Los Angeles, this factory has a cement production capacity of 1.3 million tonnes.

1991-1994

Acquisitions of Konya Cimento and Bastas Baskent Cimento in Turkey

With the acquisition of the Konya cement factory about 230 km south of Ankara, 1991 marked the Group's entry into Turkey, a country with strong potential for development. This was followed by another acquisition in 1994, of Bastas Baskent Cimento, based closer to Ankara.

Today, Konya Cimento and Bastas Baskent Cimento together have a cement production capacity of 4.8 million tonnes. The Group has supplemented its operations in this country with activities in Ready-mixed Concrete & Aggregates.

1999

Acquisition of Sococim Industries in Senegal

The Group successfully integrated Sococim Industries, a company based in Rufisque, near Dakar, thus securing access to a rapidly-developing new continent. Today, Sococim Industries has a cement production capacity of 3.5 million tonnes.

2001

Acquisition of Vigier in Switzerland

In 2001, the Group acquired Vigier, a Swiss group of companies based not far from its French operations in the Rhône-Alpes and Lorraine regions. By integrating Vigier's various businesses Cement, Concrete, Aggregates, Precast Concrete the Vicat Group expanded its own operations across the Swiss border.

2003

Acquisition of Cementi Centro Sud in Italy

In early 2003, the Group acquired a grinding plant and two shipping terminals in Italy.

2004

Establishment in Mali

Construction of a cement distribution station in Bamako.

2003

Acquisition of Sinaï Cement Company in Egypt

Vicat Group has acquired an interest in the capital of Sinaï Cement Company as part of a majority partnership in which the Group owns the majority. Today, the El Arish cement factory located in the northern Sinaï Peninsula has a cement production capacity of 3.6 million tonnes.

2006

Launch of the “Performance 2010” industrial investment plan

This major industrial investment program allowed the Group to double its cement production capacity between 2006 and 2012 while reducing production costs, especially its energy expenses, notably by increasing the use of alternative fuels.

2007

Establishment of a cement factory in Kazakhstan

Initiated in 2007, the construction of the Jambyl cement factory in Mynaral was completed in 2010, thus meeting the needs of the rapidly growing Kazakh market. The factory steadily increased its output over the following years to reach a cement production capacity of more than 1.4 million tonnes.

2008

Expansion into India and Mauritania

Formation of a joint venture between Vicat and the Indian cement manufacturer Sagar Cements. The new Company aims to build a greenfield plant with a nominal cement production capacity of 2.8 million tonnes at Chatrasala, in the southern Indian state of Karnataka.

Acquisition of a majority holding in a cement grinding mill with a capacity of 0.5 million tonnes, located at Nouakchott in Mauritania.

2010

New acquisition in India

In 2010, the Group made a significant acquisition, becoming the majority shareholder in Bharathi Cement, a company based in Andhra Pradesh state, in southern India. The production capacity of this Company's cement factory has since been raised to 5 million tonnes.

2013

Successful completion of the plan to double the Group's overall cement production capacity

Between 2006 and 2012, the Vicat Group doubled its overall cement production capacity, by creating new greenfield plants, by increasing the production capacity of its existing sites, and through external growth. In addition to marking the successful completion of this plan, 2013 also saw improved production performance made possible by new equipment.

2014

Guy Sidos was appointed Chairman and Chief Executive Officer

2014

Expansion of operations in India

Purchase of the stake held by Sagar Cements in Vicat Sagar Cement. On completion of this transaction, Vicat held 100% of the share capital of Vicat Sagar Cement, renamed Kalburgi Cement at the beginning of 2015.

2017

Bicentenary of the invention of artificial cement and creation of the Louis Vicat.

2018

Signature of an agreement for the acquisition of a majority holding in Ciplan, Brazil.

Ciplan (Cimento do Planalto) operates a cement factory near Brasilia with an annual production capacity of 3.2 million tonnes, 9 concrete batching plants and 2 aggregate quarries.

2019

On January 21, 2019, completion of the equity holding purchase of Ciplan in Brazil up to 64.74% of the share capital.

Vicat Group acquires a foothold in South America, and now operates in 12 countries.

1.4. Strengths and strategy

The Group focuses on its core business, Cement, in which it has an acknowledged historical expertise, and expands into the ready-mixed Concrete & Aggregates markets by vertical integration, in order to secure its access to the cement consumption markets. It also benefits from synergies with complementary activities, in certain markets, to consolidate its range of products and services and to strengthen its regional positioning (for example the Precast Concrete business in Switzerland or Transport in France).

The Group favors controlled development in its various businesses, balancing a dynamic internal growth, sustained by industrial investment to meet market demand, with a selective external growth policy to approach new markets having an attractive growth potential or to accelerate its vertical integration.

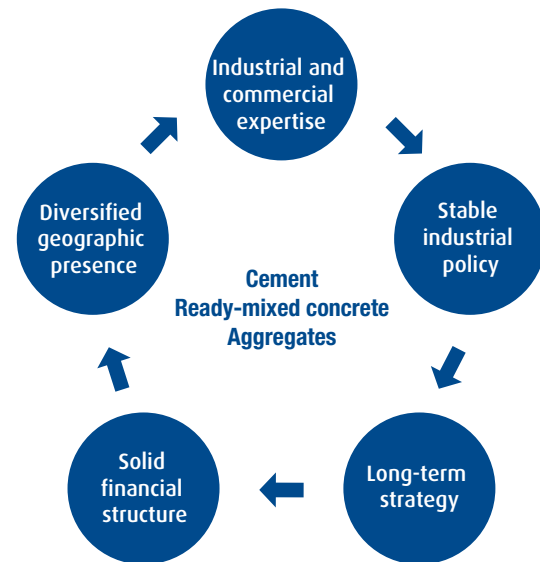
1.4.1. The Group's strengths

Over the years, the Group has developed an acknowledged expertise in its main businesses, with a multi-location approach which has led it to build strong regional positions and balance the distribution of its activities.

The Group's principal strengths can be summarized as follows:

- industrial and commercial expertise in the Group's core businesses;
- long-term strategy, assured by family shareholding and management, since the family has managed the Company for over 160 years and boasts in-depth experience of the businesses;
- diversified geographic presence with strong regional positions;
- a stable industrial policy prioritizing long-term control and management of geological reserves as well as maintaining a modern, high-performance industrial base;
- a solid financial structure with levels of profitability enabling the Group, as has been the practice in the past, to finance its growth objectives from its own resources, thereby favoring the creation of value for shareholders.

These strengths allow the Group to vigorously respond to competitive pressure in certain of its markets and to position itself effectively on sustainably growing markets by rapidly increasing its industrial production capacities, or by acquisitions. The Company combines high operating margins and active management of the environmental aspects of its operations.



1.4.2. Development strategy analysis by business

1.4.2.1. Cement

Cement is the Group's main business, forming the base of its development and profitability. Growth in this business rests on three pillars:

- dynamic internal growth;
- external growth targeting markets with high development potential;
- and the construction of greenfield plants.

The Group's production facilities are described in section 1.5 of this Document.

(a) Internal growth sustained by industrial investment

In the markets where it operates, the Group deliberately sustains its industrial investment, with the following aims:

- first, modernizing its production facilities to improve the efficiency and economic performance of its factories and thus to have the industrial capacity to respond to intense competition;
- second, increasing its production capacity to keep in step with its markets and to consolidate or increase its positions as a regional leader.

The Group intends to take advantage of its strong market positions, the quality of its production facilities and its strict cost controls in order to maximize cash flow and cut debt, so enabling further growth transactions.

The Group also wants to continue the industrial development of its businesses in general, and of its Cement business in particular, while also actively managing environmental aspects.

(b) External growth

ACQUISITIONS TARGETING NEW MARKETS WITH CONSIDERABLE POTENTIAL

The Group's strategy is to penetrate new markets in the cement sector in a highly selective manner. Accordingly, in pursuing external growth, the Group aims to satisfy all the following criteria:

- location near a significant market with attractive growth potential;
- long-term control and management of geological reserves (objective of 100 years for cement) and securing of operating licenses;
- net contribution by the project to the Group's results in the short term.

The Group's record of growth over the past 40 years illustrates the success of this policy to date. The Brazil acquisition project launched in 2018 and completed in 2019 was based on these criteria.

CONSTRUCTION OF GREENFIELD PLANTS

The Group may also seize opportunities to enter new developing markets by building new factories on greenfield sites. Such projects are examined very selectively and must comply with the Group's previously-mentioned external growth criteria.

In this context, the Group brought on stream the Jambyl Cement factory at the Mynaral site in Kazakhstan in April 2011 and the Kalburgi factory in the southern Indian state of Karnataka at the end of 2012.

1.4.2.2. Ready-mixed concrete

The Group is developing its Ready-mixed Concrete business in order to reinforce its Cement manufacturing business. This development strategy is in line with the maturity of the relevant markets and their integration in the Group's concrete production.

The Group's objective is to create a network of ready-mixed concrete batching plants around cement factories and close to its consumption markets, whether by constructing industrial sites or facilities or by acquiring existing producers.

The Group's objective in investing in this business is vertical integration while prioritizing the flexibility and mobility of its production facilities and ensuring the profitability of the business.

The Group's development in France, Switzerland, Turkey and the United States illustrates this strategy. In other markets such as India, Egypt or Senegal, the Group's strategy is to monitor trends in these markets so as to develop its activities once demand for ready-mixed concrete is sufficiently high.

1.4.2.3. Aggregates

The Group's presence in the Aggregates business is intended to provide a total response to its clients' demand for construction materials and to secure the aggregate resources necessary to develop the Ready-mixed concrete activity. Development in this business relies on industrial acquisitions and investments intended to increase the capacity of existing installations and to open new quarries and installations.

Investments in this business take into account the following criteria:

- proximity to the end markets and to the Group's concrete batching plants;
- control and management of major geological reserves (objective of more than 30 years);
- profitability specific to this business.

This development plan has been implemented successfully in France, Switzerland, Turkey, India and Senegal.

1.4.3. Geographic development strategy

The Group operates in 11 - soon to be 12 - countries. It recorded 36.8% of its consolidated sales revenues in France, 15.1% in Europe (excluding France), 15.7% in the United States, and 32.4% in emerging markets (India, Kazakhstan, Egypt, Mali, Mauritania, Senegal and Turkey).

The Group's strategy is to combine investments in developed countries, which generate more regular cash flows, with investments in emerging markets offering significant growth opportunities in the longer term, but which remain subject to more significant market fluctuations, and thereby contribute to a diversification of its geographic exposure. In this context, the Group has a particular interest in development projects in emerging countries.

In the markets where it operates, the Group aims to develop strong regional positions around its industrial Cement production facilities, while also consolidating those positions through its Ready-mixed Concrete & Aggregates businesses. Where the Group has entered a market through acquisition of a local producer, it offers its financial strength and its industrial and commercial expertise to optimize the economic performance of the acquired entity while capitalizing on the local identity of the acquired brands.

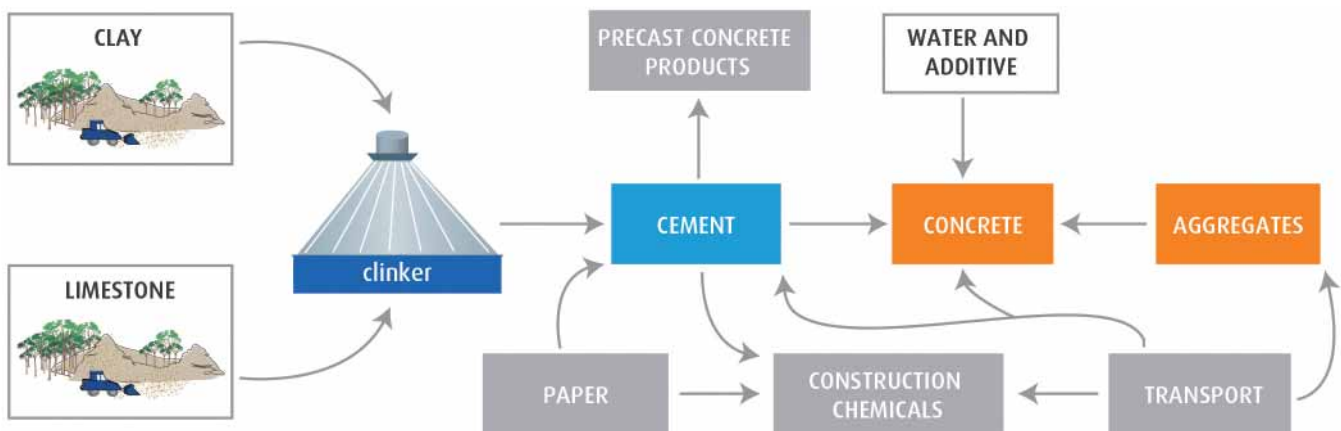
1.5. Description of businesses

The Group's three businesses are:

- Cement;
- ready-mixed Concrete & Aggregates;
- other Products & Services.

The following diagram shows the integration of the Group's various businesses.

INTEGRATION OF THE GROUP'S BUSINESSES



Cement: cement is a hydraulic binder used in the manufacture of concrete; its raw materials are limestone and clay. In contact with water, the cement silicates and aluminates reorganize and form a crystalline structure, which gives concrete its strength (see the Glossary at the end of this Document).

Ready-mixed concrete: the concrete is produced by mixing cement, aggregates, water and additives. Depending on the work for which it is intended and the environment to which it will be exposed, concrete is mixed, dosed and used specifically to meet precise quality and performance criteria.

Aggregates: aggregates are sands and natural gravels used in the construction of civil engineering works, public works and buildings. A significant quantity of these aggregates is used in the manufacture

of concrete, with the remainder being used in highway construction. The importance of products from the recovery and recycling of deconstruction waste is increasing year on year, a consequence of the Group's desire to help the environment and be part of the circular economy.

Other products and services: the Group also operates in activities complementary to its three main businesses, which enables it to develop synergies, optimize costs, and improve customer service. These activities are transport, construction chemicals, the production of paper and paper bags, and precast concrete products.

As at December 31, 2018, the Group employed 8,844 people worldwide, and recorded 63% of its consolidated sales revenues outside France.

The following table indicates the extent of the Group's business activities in each of the countries where it operates:

Country	Cement	Concrete & Aggregates	Other Products & Services
France	▼	▼	▼
Switzerland	▼	▼	▼
ITALY	▼		
USA	▼	▼	
Egypt	▼		
Senegal	▼	▼	
Mali	▼		
Mauritania	▼	▼	
Turkey	▼	▼	▼
India	▼	▼	▼
Kazakhstan	▼		

Consolidated sales revenues by business segment in 2018

(in millions of euros)	2018	%
Cement	1,252	48.5
Concrete & Aggregates	990	38.3
Other Products & Services	340	13.2
TOTAL	2,582	100.0

The share of the Group's core business contributed by Cement, Concrete & Aggregates remained fairly stable in 2018 at almost 87% of consolidated sales revenues.

EBITDA by business segment in 2018

(in millions of euros)	2018	%
Cement	330	75.9
Concrete & Aggregates	85	19.7
Other Products & Services	19	4.4
TOTAL	435	100.0

CEM I	Portland cement	The most frequently used cements in residential construction, for classic reinforced concrete structures
CEM II	Portland composite cement	
CEM III	Blast furnace cement	Conventional cements, with few heat releasing properties during hydration and with low sulfate content, used in underground work in corrosive conditions or for work in marine environments
CEM V	Slag cements	
CEM IV	Pozzolan cements	Conventional cements using mineral products of volcanic origin with hydraulic properties

This breakdown must be understood by referring to the relative significance of the capital employed in each activity, see section 1.2 "Key figures" of this Document.

See section 2.2 of the Document for the examination of the financial position and results.

1.5.1. Cement

Cement manufacture has been the Group's core business since the Company's foundation in 1853. Cement is a fine mineral powder and is the principal component of concrete, to which it imparts a certain number of properties and in particular its strength. It is a high-quality yet relatively inexpensive construction material used in construction projects worldwide.

As at December 31, 2018, the Group's worldwide Cement business comprised 15 cement plants and 5 clinker grinding plants. In France, the Group also operates two factories specializing in natural fast-setting cement. The Group's cement volume sales in 2018 (before intra-group eliminations) amounted to 22.8 million tonnes (compared with 22.9 million tonnes in 2017 and 21.9 million tonnes in 2016). In 2018, this segment thus accounted for 48.5% of the Group's consolidated sales revenues (48.6% in 2017 and 51.7% in 2016) and 75.9% of the Group's EBITDA (79.6% in 2017 and 83.1% in 2016).

1.5.1.1. Products

The Group manufactures and markets various categories of cement, which are classified according to the chemical composition of their constituent raw materials, any addition of supplementary ingredients at the grinding stage, and the fineness of the product. Each cement range is appropriate for specific applications such as housing construction, civil engineering works, underground works, or the production of concretes subject to corrosive conditions.

The distribution between each type of application on a given market depends on the maturity and the construction practices of the country. The Group's cement factories manufacture conventional cements as well as cements for specific applications. In both cases, these cements are certified as compliant with the standards currently in force in the various countries where Vicat operates, in terms of both composition and designation. The principal cement categories produced by the Group are listed and classified below according to French standards:

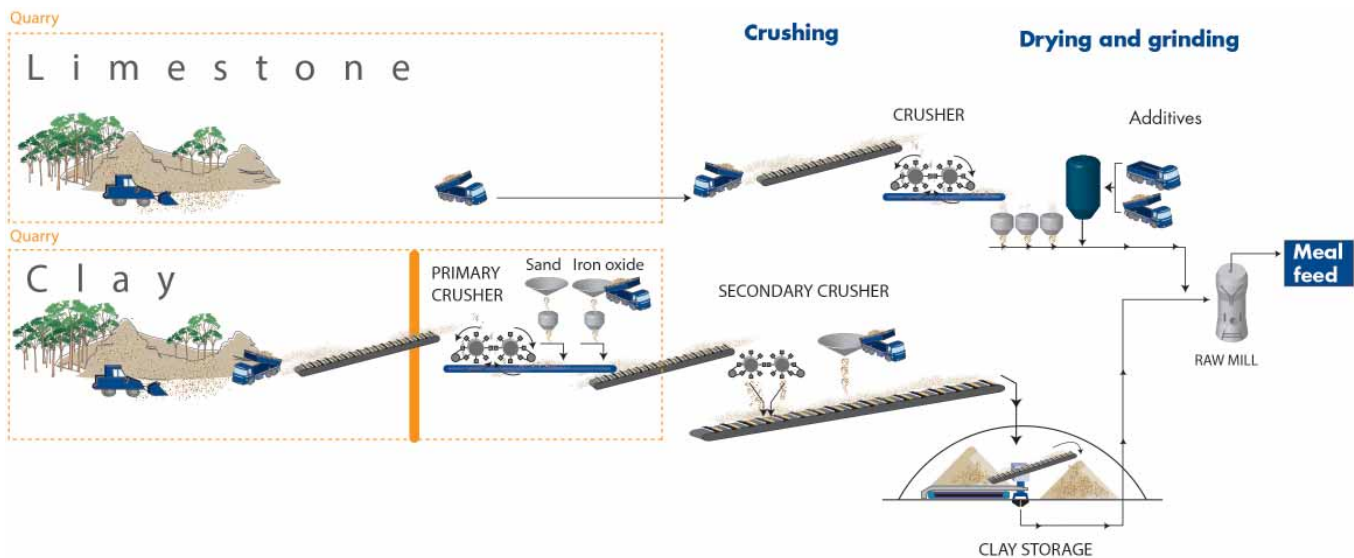
Natural quick-setting cement has been added to these categories: a special quick-hardening cement, whose strength is immediately superior and increases gradually over time. For 160 years, the Group has produced its quick-setting cement from a natural alpine stone, with an exceptional performance offering immediate and high strength as well as low shrinkage. This cement is used for sealing blocks or plugging leaks, and for renovating exterior walls.

All these cements are checked regularly and thoroughly at each stage of the manufacturing process, thus guaranteeing compliance of the finished product with current standards. In addition, the Group conducts research & development programs on its products and their applications, advancing the knowledge of these products and optimizing their use (see section 1.8 "Research & development" of this Document).

1.5.1.2. Manufacturing methods

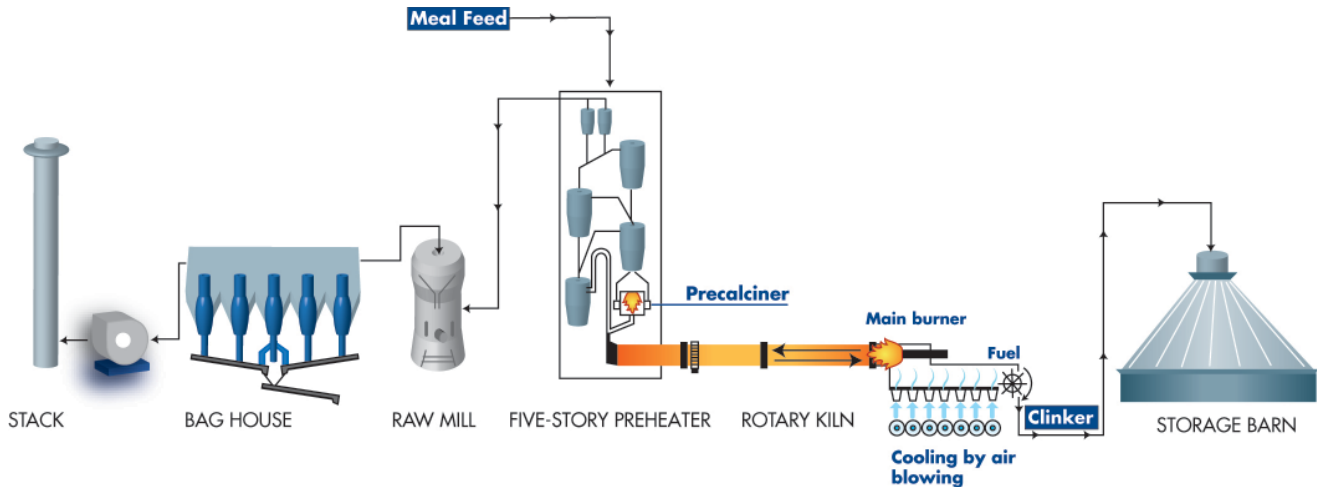
Cement is manufactured, in the dry process, mainly in four stages:

- extraction of raw materials: limestone and clay are extracted from quarries generally located near the cement factory. The rock is blasted out with explosives. The rocks and blocks obtained are then transported to crushers, in order to reduce their size and obtain stones less than 6 cm in diameter;
- preparation of the raw material: the materials extracted from the quarries (limestone and clay) are finely crushed until rock meals are obtained. These meals are then mixed in fixed proportions (approximately 80% limestone and 20% clay) before being fed into the kiln. The chemical composition and the homogeneity of the material on entry to the kiln, and its regularity over time, are fundamental elements in controlling the production process;



- the kiln system includes a heat exchanger cyclone tower, where the raw meal is introduced after being heated by the exhaust fumes from the revolving kiln (pre-calcination phase). The raw meal undergoes complex chemical reactions during this firing: first, limestone is decarbonated under the action of the heat at a temperature approaching 900°C and is converted into lime, while clays are broken

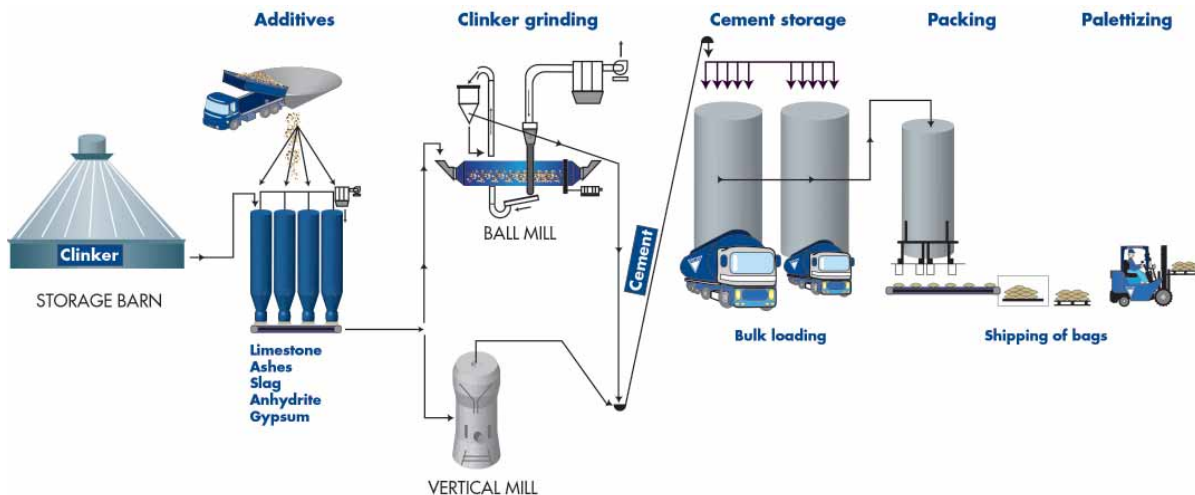
down into silicates and aluminates. The unit then recombines these at a temperature of approximately 1.450°C into lime silicates and aluminates. This chemical process creates a semi-finished product called clinker, which has the properties of a hydraulic binder. This firing takes place in tilted revolving kilns lined with refractory bricks.



There is a large global trade in clinker, the semi-finished product. As this product is easier to transport and store, clinker transfers from areas with excess capacity to areas with under-capacity or to areas not having the mineral resources necessary for clinker manufacture have been developing over the past few years. This reduces the volume of the transported product compared with cement, thereby lowering logistics costs. Once it has reached the consumption market, clinker is delivered to grinding plants, which complete the Cement manufacturing process

up to packaging and distribution. This method is particularly used by the Group in Italy and Mauritania;

- at the final stage, clinker is ground very finely and limestone filler and gypsum are then added to obtain artificial cement, which can be sold in bags or in bulk. Gypsum and limestone filler are added in order to control the cement setting time. Depending on the quality of the cement, other additives may be included, such as fly ash, blast furnace slag or natural or artificial pozzolans.



There are three types of Cement manufacturing processes, each characterized by the specific treatment of the raw materials before firing, namely the dry, semi-dry/semi-wet, and wet processes. The technology used depends on the source of the raw materials. The source and nature of the clay or limestone, together with the water content, are particularly important. In recent decades, the cement industry has invested heavily in a planned migration from the wet to the dry process, which consumes less energy, when raw material resources permit. Of the Group's 21 kilns currently in service, 20 are dry process kilns.

The Cement manufacturing process is very energy intensive, in terms of both electricity and thermal energy. Electricity is used for transporting the materials inside the factories for the crushing and grinding operations, while thermal energy is consumed mainly when firing the clinker. The cost of energy accounts for over 30% of the average ex-works cement cost price for the industry and is the primary expense item (this percentage being lower for the Group). In 2018, energy costs for the Group as a whole amounted to over € 300 million. The Group allocates a significant part of its industrial investment to improving its energy productivity.

The Group optimizes its energy requirements by using waste as alternative fuel to fossil fuels (coal, gas and oil). The combustion of this waste in a clinker kiln makes it possible to recover and use the energy released. All the Group's French factories have obtained agreement from the inspecting authorities to use non-hazardous industrial waste or landfill waste (tires, animal meal, industrial oils, etc.) as fuel. The Group gives priority to multi-fuel factories capable of switching between different kinds of fuels according to fuel price. In 2018, the share of alternative fuels in the Group's Cement manufacturing business was 25.7% on average (compared with 25.2% in 2017 and 24.6% in 2016), with significant variations (from 0% to 90%) depending on the availability of fuels in the countries where Vicat operates.

For further information on alternative fuels, see section 1.8 "Research & development" and section 2.2.1.1 "Recovering the materials and energies at its local sites" in the Statement of Extra-Financial Performance included in this Document.

The Group also uses clinker replacement materials produced by other industrial processes, such as fly ash (derived from the burning of coal in power plants) or blast furnace slag (which is a by-product from steel works). The use of such materials in defined proportions can improve certain properties of the cement and reduce the amount of clinker and thus the amount of fossil fuel needed for its manufacture. Also refer to section 2.3.3.2. "Producing by managing the land footprint and consumption and by emitting less" in the Statement of Extra-Financial Performance included in this Document.

1.5.1.3. Operating sites and production equipment

The Group manufactures cement in all 11 - soon to be 12 - countries where it operates.

The Group is one of the leading cement manufacturers in the French market, with strong positions in the eastern half of the country, and particularly in the southeastern quarter of the country. The Group has also developed solid positions in the southeastern states (Alabama, Georgia) and California in the USA, the western half and center of Switzerland, in Central Anatolia, Turkey, and the Sinai region and Cairo in Egypt. The Group also estimates that it has a leading position in Senegal and the countries bordering it. In addition, the Group has a grinding plant and shipping terminals in Italy. Finally, by establishing facilities in Kazakhstan and in the southern Indian states of Karnataka and Andhra Pradesh, the Group confirms its geographic diversification and its international dimension.

The table below shows the Group's various cement production sites in France and abroad:

Country	Production capacities	Sites	Key dates
France	4.6 MT	Montalieu (1 dry process kiln)	The Group's main cement factory in France, its initial construction dates from 1922.
		La-Grave-de-Peille (1 dry process kiln)	Built in 1929, the La Grave-de-Peille factory is the Group's second largest cement factory in France.
		Créchy (1 dry process kiln)	Built in 1968. This cement factory is located near Vichy.
		Xeuilley (1 semi-wet process kiln)	Acquired in 1969, during the cement industry's restructuring period.
		Saint-Egrève (1 dry process kiln)	Acquired in 1970. This factory is located in South-East France, in the Rhône-Alpes region.
USA	2.6 MT	Ragland (1 dry process kiln)	The 1974 acquisition of this cement factory in Alabama marked the first step in the Group's international development.
		Lebec (1 dry process kiln)	In 1987, the Group reinforced its presence in the United States with the acquisition of this factory near Los Angeles in California.
Turkey	4.8 MT	Konya (2 dry process kilns)	This factory, acquired in 1991, is located in the southern portion of the Anatolian plateau.
		Bastas (2 dry process kilns)	This cement factory, acquired in 1994, is located in central Turkey, near the country's capital, Ankara.
Senegal	3.4 MT	Rufisque (3 dry process kilns)	In 1999, the Group took over Sococim Industries, which operates a cement factory near the capital, Dakar.
Switzerland	0.9 MT	Reuchenette (1 dry process kiln)	The acquisition of Vigier in 2001 allowed the Group to expand its presence in Europe.
Egypt	3.6 MT	El Arish (2 dry process kilns)	At the beginning of 2003, the Group took a strategic holding in the Sinai Cement Company, owner of a cement factory built in 2001, located 40km from El Arish port.
Italy	0.5 MT	Oristano (grinding mill)	Acquired in 2003, Cementi Centro Sud is the owner of a grinding mill in Sardinia and has 2 shipping terminals in Taranto (in Apulia) and Imperia (near Genoa).
Mali		Bamako (distribution depot)	After a first facility established in 2004, inauguration in 2006 of a railway terminal and a bagging unit, operated by the subsidiary Ciments et Matériaux du Mali.
Kazakhstan	1.5 MT	Mynaral (1 dry process kiln)	In 2007, the Group acquired a special-purpose company established to build a cement factory 400 km north of Almaty. The factory came on stream at the start of April 2011.
Mauritania	0.5 MT	Nouakchott (grinding mill)	In 2008, the Group acquired 65% of the share capital of BSA Ciment SA, which operates a cement grinding mill near the Mauritanian capital.
India	7.8 MT	Chatrasala (1 dry process kiln)	Kalburgi Cement (formerly Vicat Sagar Cement) built a greenfield plant in northern Karnataka. This cement factory, with a capacity of 2.8 million tonnes, began production at the end of 2012.
		Kadapa (2 dry process kilns)	In April 2010, the Group acquired 51% of the company Bharathi Cement. This company had a plant with 2.5 million tonnes of capacity, which was raised to 5 million tonnes by the end of 2010.

This represents a total production capacity of 30.2 million tonnes.

The acquisition of a shareholding in Ciplan, Brazil, will provide an additional 3.2 million tonnes in capacity in the Brasilia region.

Section 1.7 "Overview of markets and Group performance" rounds out this presentation by providing information for each country.

The cement industry is highly capital-intensive, requiring significant investments. The cost of building a cement factory generally amounts to between € 150 million and € 300 million per million tonnes of capacity, depending on the type of work, the production capacity planned and the country where it is built. The Group takes care to maintain its production facilities at a high level of performance and reliability. Accordingly, it has regularly invested in new equipment, giving it the benefit of the latest proven and recognized technologies, and has thus in particular steadily

improved the energy balance of the installations. The choice of leading international suppliers is also in line with the Group's policy of industrial excellence intended to give priority to quality, durability and performance of the equipment.

In most cases, the Group owns the land on which its cement factories are built. The Lebec cement factory has a lease granted in 1966 for a term of 99 years with 47 years remaining. In addition, except for some vehicles (such as loaders, trucks and wagons), the Group generally has full ownership of its production equipment.

The Group controls and manages the clay and limestone quarries whether by owning the land it exploits, or through renewable mining rights agreements for terms of between 10 and 30 years according to country, or again through concessions granted by the state, which offer both possession of the land and the right to exploit it. These concessions are also renewable periodically.

From the outset of its quarry operations, the Group takes into account the constraints of restoring its sites. For details, see paragraph 2.2. "Protecting ecosystems and biodiversity" in the Statement of Extra-Financial Performance in chapter 2 of this Document.

1.5.1.4. Competitive position

A trend toward concentration has occurred in recent decades, first in Europe, then in the United States, followed by the rest of the world, leading to the emergence of powerful global players. From this standpoint, 2015 and 2016 were prolific years for concentrations of key players. Nevertheless, the worldwide cement industry remains fragmented: in 2017, the world leader had a global market share of less than 7% ⁽¹⁾.

Markets are therefore subject to strong competition, and the Group faces competition from both domestic cement manufacturers such as Oyak in Turkey, Ciments du Sahel in Senegal, UltraTech in India, or Steppe Cement in Kazakhstan, as well as with multinational cement manufacturers such as LafargeHolcim (Switzerland), Cemex (Mexico) and HeidelbergCement (Germany). These companies operate in a number of the Group's markets.

As cement is a heavy product and expensive to transport, the operating range of most cement factories does not generally exceed 300 km by road. Competition thus plays out mainly with cement manufacturers having factories in the Group's marketing zones. Except in the case of cement factories with sea or river access, able to ship their cement over long distances at low cost by boat, or by rail in some countries such as India or Kazakhstan, the cement market remains local.

As mentioned in section 2.4 "Investments", this activity is also highly capital intensive and the construction of new capacities must necessarily rely on effective land control of significant high-quality quarry reserves, the ability to obtain operating permits, the existence of available energy sources, and the presence nearby of a large and growing market.

Moreover, cement players active in a local market should be able to provide their customers with continuous services, in all circumstances, and with products of consistent quality that meet their expectations as well as applicable standards.

1.5.1.5. Customers

The profiles of customers are similar in most areas in the world where the Group is established. Customers are either general contractors, such as concrete mixers, manufacturers of precast concrete products, contractors in the construction and public works sector, local authorities, residential property developers or master masons, or intermediaries such as construction material wholesalers or retail chains. The relative significance of one type of customer, however, can vary considerably from one country where Vicat operates to another according to the maturity of the market and local construction practices.

The Group sells its cement in bags or in bulk, depending on the level of development in the country where it operates. Accordingly, as ready-mixed concrete is a very mature sector in the United States, in this market the Group primarily sells its cement in bulk and mostly to concrete mixers. Conversely, in Senegal, which has yet to develop a ready-mixed concrete sector, the Group sells its cement primarily in bags to wholesalers and to retailers.

1.5.2. Ready-mixed Concrete

Ready-mixed concrete, in which cement is a main component, is an essential material in today's construction projects.

Ready-mixed concrete activities have been established in each of the countries where Vicat operates through the acquisition or formation of many companies. The Group initially developed its Ready-mixed Concrete business in France during the 1980s, through direct investments in companies. The Group then pursued its goal of vertical integration by selective acquisitions of companies, firstly in the markets served by its Cement business, and secondly by developing its production facilities in its existing locations.

The Group operated 247 concrete batching plants distributed over five countries as at December 31, 2018, and its companies sold more than 9.0 million m³ of concrete during the year. The network will be strengthened with 9 more batching plants in 2019 with its arrival in Brazil.

(1) Source Global Cement Report.

1.5.2.1. Products

Concrete’s main qualities are its strength under compression, its durability and rapid setting time, together with its ease of pouring and handling under varied weather and construction conditions. The qualities and performance of a concrete can be obtained and guaranteed only if the physico-chemical formulation of the concrete and its production cycle are adhered to rigorously. For perfect formulation

of concrete, the various components must be precisely proportioned in a given order and at a given rate, and these materials must then be mixed continuously and uniformly. These production constraints explain why concrete manufactured in a batching plant is of a superior quality and uniformity to any concrete mixed manually or in a concrete mixer. This is the reason for the growth of ready-mixed concrete, which guarantees compliance with the standards laid down in construction work specifications.

The Group offers a broad range of concretes, ranging from standard concrete to special concretes, developed for specific applications by its research & development laboratory, thus meeting its customers’ needs and constraints; the Group markets the following concretes in France:

Flexiperf	Fluid concretes and mortars	Concrete and anhydrite screeds and self-placing horizontal and vertical concrete	<i>Flexiperf adapts to all situations for flawless quality</i>
Stylperf	Decorative concrete floors	Colored, deactivated, forged, stabilized, luminescent concretes	<i>The Stylperf range offers a variety of textures, appearances and colors so that our clients can let their creativity develop</i>
Defiperf	Specific concretes	Heavy and light concretes, shotcrete and extruded or structurally isolating concrete, dipped concrete and pavements	<i>It offers a high level of performance to meet the highest demands</i>
BVperf	Standard concretes	Specific properties and prescribed composition concrete paving	<i>BVperf guarantees works are carried out in accordance with good practices and environmental requirements.</i>

The Group’s research & development laboratories design innovative concrete for new applications or ease of use. See section 1.8 “Research & development” of this Document for further details.

1.5.2.2. Manufacturing methods

Concrete is obtained by mixing aggregates, cement, chemical additives and water in various proportions in batching plants to produce ready-mixed concrete. A concrete batching plant consists of silos (for cement, sands and fine gravels), storage tanks for the various additives, and a mixer. In the United States the mixing of the concrete usually takes place in the mixer truck, unlike in other countries where this operation occurs at the plant, before it is dispatched.

The proportions of cement and aggregates (sands and fine gravel) can vary, chemical additives (such as plasticizers, setting retardants or accelerants) can be added, and a part of the cement can be replaced by derivatives such as fly ash or slag, in order to obtain the concrete properties sought by the customer. Significant technical expertise and demanding quality control is therefore essential to handle the many construction factors to be taken into account by the Group’s customers, such as setting time, suitability for pumping, pouring the concrete, weather conditions, shrinkage and structural strength.

The qualities and performances of a concrete can be guaranteed only if the formulation is very precise and its production cycle rigorously adhered-to. The dosage of water, in particular, must be precise and the materials must be mixed continuously and uniformly. To meet all these

constraints, the Group’s concrete batching plants have been largely automated, in order to guarantee precision in the process.

The concrete prepared in the batching plant is loaded by gravity into a mixer truck, which delivers the concrete to the customer. Depending on the country, the Group either operates its own fleet of mixer trucks or uses subcontractors, to whom it subcontracts ready-mixed concrete deliveries. Delivery logistics are an essential aspect when manufacturing concrete because of its limited setting time. A significant portion of ready-mixed concrete is pumped from the mixer truck to the point of placement at the construction site. This delivery approach is made possible by pump trucks, a number of which are owned or leased directly by the Group (in particular in France by its subsidiary Delta Pompage).

Raw material prices vary considerably according to the national markets in which the Group operates. In general, raw materials account for approximately 70% of the total production costs of concrete delivered. Cement represents, overall, more than half of this cost. Delivery is the second largest component of the cost, at approximately 20% of the total. A significant portion of the cement and aggregates used in its concrete batching plants is supplied by the Group.

In France, the technical sales team of the Group’s Ready-mixed Concrete business enjoys the collaboration of Sigma Béton, a key unit of the Louis Vicat Technical Center, specializing in the ready-mixed concrete, aggregates and road products sectors, and certified ISO 9002 for the formulation, analysis and audit of aggregates, cement and concrete.

1.5.2.3. Operating sites and production equipment

The Group has vertically integrated its operations in France, Switzerland, the United States, Turkey and Mauritania, and has operations in its Cement and Ready-mixed Concrete businesses in these countries.

As at December 31, 2018, the Group operated 247 concrete batching plants, located near its principal cement production sites, forming regional networks in order to supply construction sites and urban centers:

- France: 146 concrete batching plants;
- Switzerland: 19 concrete batching plants;
- United States: 44 concrete batching plants;
- Turkey: 37 concrete batching plants;
- Mauritania: 1 concrete batching plant.

In 2019, 9 plants will be added to this industrial tool in Brazil with the acquisition of Ciplan.

These batching plants are located near the places where the concrete is used since, in view of the setting times, concrete prepared in a batching plant must be delivered to the pouring site within one and a half hours at the most. The operating range of a batching plant is generally between 20 and 30 km, depending also on traffic conditions in the area.

The majority of the concrete batching plants are fixed, although the Group also uses a certain number of mobile systems that are installed on its customers' construction sites (generally the largest ones), according to customers' needs.

1.5.2.4. Competitive position

Since barriers to entry are not high, the ready-mixed concrete market is very fragmented, with a number of large players, from cement manufacturers and international industrial groups to independent operators.

1.5.2.5. Customers

Ready-mixed concrete is sold mainly to construction and public works contractors, from major international construction groups to house building companies, farmers or private individuals. The concrete batching plants fulfill scheduled work contract orders and immediate delivery requests.

1.5.3. Aggregates

The Ready-mixed Concrete & Aggregates businesses are managed within the same segment, because of the similarity of their customers and the Group's vertical integration policy.

The Group sold 22.7 million tonnes of aggregates in 2018, produced by its 70 quarries. In 2019, two aggregate quarries will be added to this industrial tool in Brazil with the acquisition of Ciplan.

1.5.3.1. Products

Aggregates (sands and gravel), which are the principal raw materials consumed in the world after water, are natural materials used in the manufacture of concrete, masonry and asphalt. They are also the basic materials for building roads, infill and structures.

There are two main product categories: those from crushed rocks (solid rock) and those from natural gravel and sand (alluvial). This is in addition to recycled materials from demolitions, the share of which is growing every year in order to save natural resources.

Local geology determines the types of aggregates available in a given market. The products differ in physical and chemical composition, particularly in their size, hardness and color. They are typically designated by minimum and maximum diameters.

- Solid rock is extracted from limestone, granite, porphyry and other massifs. These materials are mainly intended for earthworks, for the manufacture of bituminous mix, blocks or breeze blocks, and increasingly for manufacturing ready-mixed concrete. These materials are mainly intended for earthworks, for the manufacture of bituminous mix, blocks or breeze blocks, and increasingly for manufacturing ready-mixed concrete.
- Sand and limestone or sand-lime gravel are extracted from ancient sedimentation of river or glacial deposits, and supply concrete batching plants, bituminous mix plants and construction or public works sites. Materials produced are sand, fine gravel, rolled or crushed gravel primarily intended for precast concrete products, public construction, plasters and the preparation of bituminous mix.

1.5.3.2. Manufacturing methods

Aggregates can come from solid or alluvial rock:

- solid rock: the rock is blasted out with explosive before being crushed, sifted and then washed. Crushers are used to reduce the large rocks to a finer gravel. Processing is completed by sifting the material to sort the various "cut-offs" and recycle the coarse particulates. From the beginning of a project, solid rock quarry operations take integration with the environment into account during operations, and the future of the site once the quarry is closed;
- alluvial rocks: these rocks derive from the sedimentation of river or glacial deposits. Extracted gravel is conveyed to processing facilities by conveyor belts or dumpers, or by boat, geography permitting. In some cases, some of the processing can take place directly in the dredger. The transported product is then washed, sifted and crushed to achieve the desired size.

The wash water is processed using hydrocyclone separation to recover usable fine particulates. This water is then clarified to be fully reused during the process. Residual clay can be used to reconfigure the quarry, as embankments or as an agricultural sub-layer. A wide range of site configuration options is available following closure of the quarry: sports field (lawn, track, etc.), industrial platform, restoration as agricultural or forested land, plantings on the slopes, wetlands and so forth. If bodies of water were created, they can be used for fishing, boating or an environmental project.

The production of aggregates requires heavy equipment in a quarry, for handling both solid rock and alluvial rock. The quarrying and grinding of solid rock requires the use of loaders, transport equipment and crushers. Aggregates on the processing site are generally transported using conveyor belts.

1.5.3.3. Operating sites and production equipment

The Group's strategy for its Aggregates business in France and in Switzerland is to concentrate on the regions where it already has a presence in the Ready-mixed Concrete business. The Group regularly acquires quarry owners in the aggregates industry or directly establishes operations at new sites.

In other countries, the aim is to round out the Group's offerings to its customers, especially where local requirements are not adequately met and where there is promising growth potential.

As at December 31, 2018, the Group operated 70 quarries:

- France: 40 quarries;
- Switzerland: 20 quarries;
- Turkey: 7 quarries;
- Senegal: 2 quarries;
- India: 1 quarry.

In 2019, 2 aggregate quarries will be added in Brazil.

Extractions are performed on land which the Group owns or over which it has long-term operating rights, and for which it has obtained the necessary licenses. In addition, the Group maintains the level of its reserves through acquisitions and by obtaining new extraction licenses.

Finally, management of the quarries takes into account the vital need to restore the sites. This policy is described in detail in the Statement of Extra-Financial Performance in chapter 2.2. "Protecting ecosystems and biodiversity" in this Document.

The industrial plant comprises heavy equipment such as loaders, haulage machines, crushers and other equipment such as dredgers or draglines. With the exception of some vehicles held under leases or finance leases agreements, the Group generally owns this equipment.

1.5.3.4. Competitive position

The aggregates market is generally fragmented into many local markets. The various participants are regional or national quarry operators, firms in the construction and public works sector which are vertically integrated, together with international industrial groups supplying construction materials.

The Group gives priority to operating quarries located near the consumption markets, so as to optimize its production costs. This approach facilitates access to customers and reduces transport costs.

1.5.3.5. Customers

The Group sells a portion of its aggregates to ready-mixed concrete manufacturers, in the form of either intra-group or external sales. Other customers include manufacturers of precast concrete products, contractors in the public works and road construction sectors, either for their asphalt plants or as infill, construction contractors, but also farmers or private individuals for various purposes.

1.5.4. Other products and services

In France, Switzerland, Turkey and India, the Group also has operations in activities complementary to its main businesses. These activities are transport, construction chemicals, the production of paper and paper bags, and precast concrete products.

Operations in the Group's Other Products & Services segment are described in section 1.7 "Overview of Group performance and markets" of this Document.

1.5.5. Operating sites and production equipment

2018

With the Ciplan acquisition in Brazil in 2019

15

16

Cement plants

5

5

Grinding plants

30

33 million tonnes

of cement capacity

247

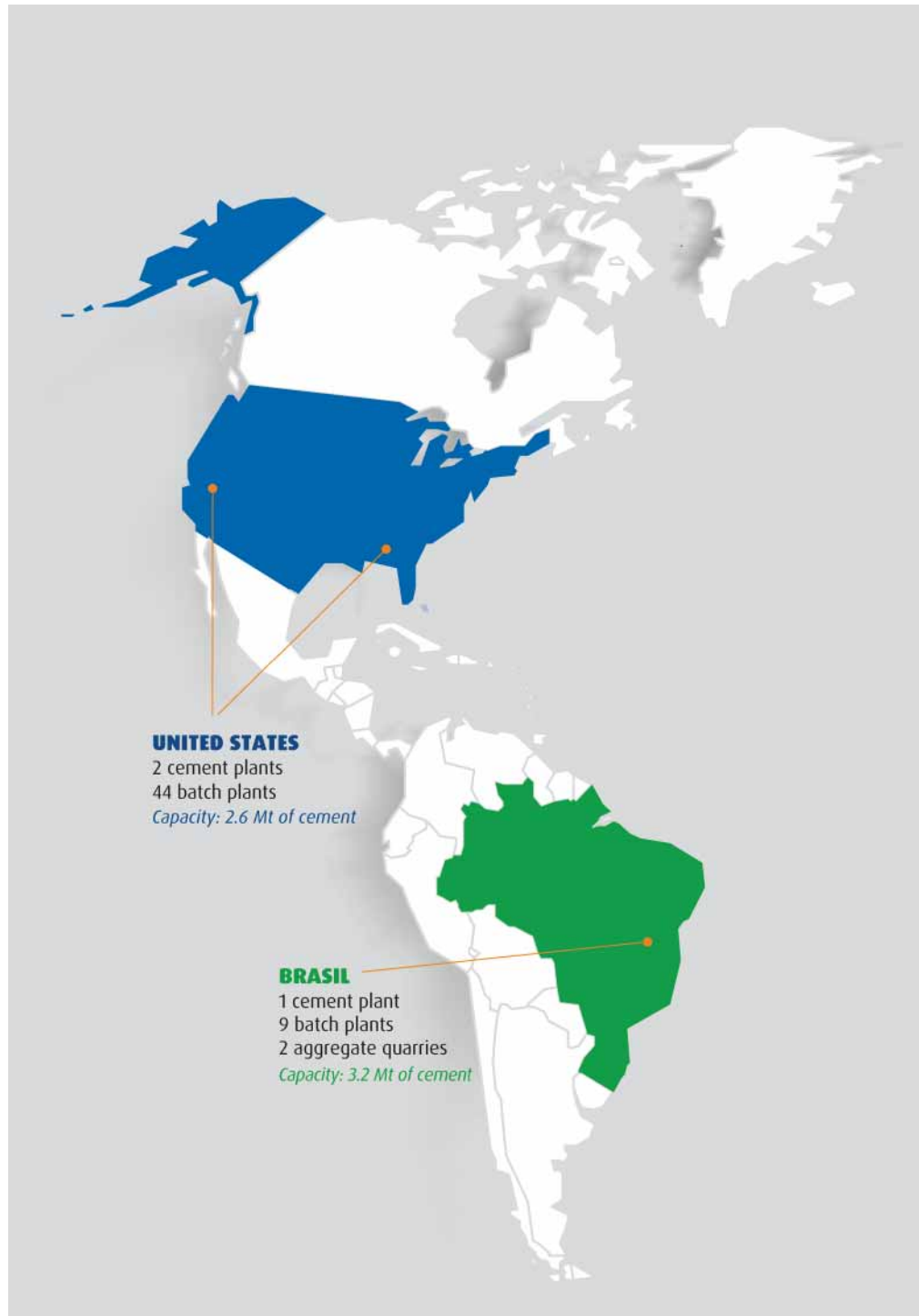
256

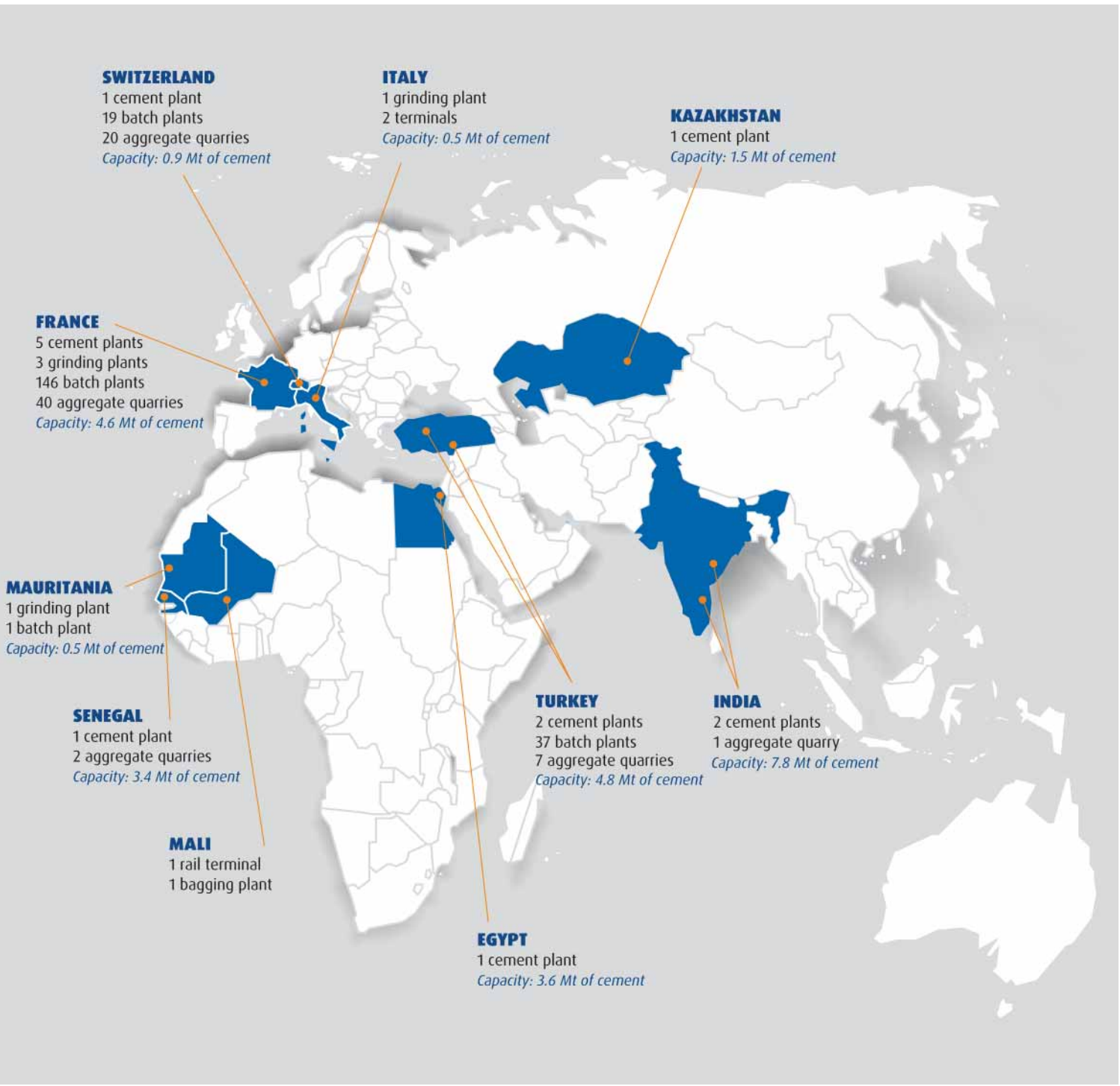
Concrete batching plants

70

72

Aggregate quarries





1.6. Research & development

The Group's research resources, housed in the Louis Vicat Technical Center at L'Isle-d'Abeau near Lyon in France, are focused on innovation, development and product follow-up.

Opened in 1993, this center is located in the heart of the Rhône-Alpes region, close to the Group's long-established facilities in Grenoble and its flagship cement factory in Montalieu, in the Isère department. A team of 90 research scientists, engineers and technicians works in three different laboratories:

- the materials and microstructures laboratory, which investigates the properties of materials and formulates new binders/cements;
- the Sigma Béton laboratory, which formulates and maintains quality control objectives for concrete and aggregates;
- the construction industry product formulation laboratory, which develops innovative compounds for interior building works.

The main themes addressed by the Group's research & development teams involve anticipating or responding to the specific demands of its customers in a market that has changed rapidly in recent years, being guided by the following concerns:

- the environmental challenges faced by the planet, which are accelerating efforts made by the Group for over a decade to reduce its carbon footprint among other aims;
- recyclability of materials to protect natural resources;
- renovation of buildings to improve their thermal and acoustic performance;
- the need for greater sustainability of structures so that they can be used in several ways over their life cycle;
- taking account, early in the product development process, of the arduousness of working conditions for our employees and for our customers when implementing solutions.

In the context of these activities, the Group registers patents in order to protect the development of products resulting from the work of its research & development teams. The Group is not dependent on patents, licenses or manufacturing processes protected by third-party intellectual property rights.

Total research & development expenses amounted to € 4.2 million in 2018 (see note 4 to the consolidated financial statements in section 6.1.1 of the Registration Document).

1.6.1. Processes

Research topics are taken into account in manufacturing methods.

Efforts to improve the energy efficiency of cement factories, reclamation of excavated land (site decontamination), recycling of materials from demolition and the substitution of alternative

fuels for fossil fuels are based on a circular economy model. In 2018, the use of alternative fuels avoided the consumption of the equivalent of 644,000 tonnes of carbon and lowered CO₂ emissions by increasing the proportion of energy generated using biomass. Cooperation between the research & development teams and our plants allowed this modification of the energy mix while optimizing cement quality.

Products are developed in accordance with the eco-design principle, particularly with regards to end-of-life recycling. The recycling of products from deconstruction is therefore naturally an important area of research & development. In particular, Vicat is heavily involved in domestic projects Recybéton and FastCarb, as well as in the European project Seramco.

1.6.2. Low-carbon products

For over ten years, research has focused on the development of new cements which, with equivalent mechanical properties, will result in lower CO₂ emissions. This issue, which is fundamental for the future of the industry and is in line with the Group's objective of taking part in the collective effort in favor of the environment, mobilizes significant manpower in the fields of crystallography, thermodynamics and additives. State-of-the-art equipment is used to pursue research in this area, ranging from a diffractometer to an X-ray fluorescence spectrometer and an electron microscope. This research resulted in the industrial production of a new cement, ALPENAT UP, in 2013. The cement, concrete and building systems research & development teams, now grouped within a single research & development Department, support the sales team and our customers to bring new products to the market.

1.6.3. Constructive solutions

The Group is constantly developing new concrete products to meet the expectations of customers in the building and public works sector. Several technological breakthroughs have been achieved in the concrete industry, with self-leveling concretes, for example, whose extreme fluidity allows them to move effortlessly into and through intricate formwork make working conditions less arduous. The development of high and ultrahigh performance concrete, and more recently of ultra-high performance fiber-reinforced concrete, SMART UP at Vicat, have multiplied the material's resistance tenfold (compressive strength of around 200 MPa). These concrete products meet the exacting requirements of customers for the construction of complex civil engineering structures or high-rise buildings, giving free rein to architectural creativity.

Changes in French thermal regulations adopting the commitments of the Grenelle environmental round table are taken into account. Research is also aimed at precisely determining the contribution of concrete to the design of innovative construction solutions meeting high energy-efficiency standards for buildings. The Group is thus taking part in a joint research project with scientists from the *Commissariat à l'Energie Atomique* (CEA) working at the *Institut National de l'Energie Solaire* (INES) in Chambéry to develop precise inertia models for concrete. Research & development teams are developing insulating structural concrete products and are also working to optimize acoustic comfort.

Vicat has a sustainable construction solution made from natural quick-setting cement manufactured at the Group's production facility at the foot of the Chartreuse mountain range combined with bio-sourced materials, such as hemp.

Its analytical capabilities enable the Louis Vicat Technical Center to diagnose issues affecting concrete poured in the 19th and 20th centuries and offer treatment solutions. Vicat is a member of the

Cercle des Partenaires du Patrimoine, an association formed by the French Ministry of Culture and Communication to mobilize companies in support of research programs relating to heritage building fabric, and thus takes part in research on approaches to the restoration of our architectural heritage.

1.6.4. Partnership policy

The Louis Vicat Technical Center works closely with several public and private research centers such as the French research agencies CEA (Atomic Energy Commission), INES (Solar-Energy Institute) in Chambéry, IFSTTAR (Institute for the Science and Technology of Transport, Development and Networks), the research laboratories at architecture schools, universities, and technical departments of some of the Group's customers in the building and public works sector. The collaborative projects also include local and international industrial partners.



Fountain in the town of Mladá Boleslav in the Czech Republic, created by the artist Veronika Psočková, made from Vicat's natural quick-setting cement

STATEMENT OF EXTRA-FINANCIAL PERFORMANCE - 2018

2

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The business Model

“Cement gave the world safety and comfort. Now, it is the key material for meeting the challenges of population and climate.”

M. Guy Sidos, Chairman and Chief Executive Officer

ITS VALUES, ITS STRENGTHS*

Its values and its strengths on which the Company relies to achieve its ambitions

INTELLECTUAL

- Louis Vicat's invention of artificial cement in 1817.
- Recognized know-how in Cement, Ready-Mixed Concrete & Aggregates.
- Industrial and commercial expertise.
- A tradition of innovation and technical excellence.
- Participation in countless civil engineering structures.

HUMAN

- High-quality employee relations founded on respect.
- Nearly 9,500 committed employees passionate about these shared values.

INDUSTRIAL

- A high-quality, modern, high-performance industrial base.

ENVIRONMENTAL

- A rich and diversified footprint: forests, wetlands, wilderness areas, industrial sites that work as biodiversity reserves.
- Major geological reserves.

SOCIAL

- Institutional, scientific, and technical partnerships.
- Local identity prioritized.
- Two corporate foundations, Sococim and Louis Vicat.
- Close relationships with local communities.
- Its customers' trust.
- Leading suppliers.

FINANCIAL

- Financially solid – high equity - limited indebtedness.
- Geographical diversification.

ITS AMBITIONS ⁽¹⁾

What the Company wants to do

Given the scale of the challenges of population and climate, the most affordable material for the greatest number of people is cement (accessible, available all over the world, scalable, and compatible).

MEETING NEEDS ⁽²⁾

- Offering high-quality, affordable, safe, and scalable products for construction.
- Designing products that are adapted for the effects of climate change, putting its analytical ability toward the energy transition, and educating and training its stakeholders in combating climate change.
- Sharing the value created with the communities where it operates by giving preference to hiring locally, to strengthen the circular economy.
- Supporting its employees' skills acquisition and development to foster the concept of employability.

PROVIDING A SERVICE ⁽³⁾

- Developing comprehensive offerings for the transformation of raw materials and waste in the regions where they are extracted or produced, and being an active participant in the circular economy.
- Supporting its customers' projects by ensuring the best use of its products with the right specifications and the support of digital services (PIM and BIM).
- Promoting diversity and equal treatment.
- Offering the greatest number of people access to essential services through educational, cultural, health, and environmental actions.

PRODUCING IN THE BEST CONDITIONS ⁽⁴⁾

- Respecting personal integrity through high-quality employee relations and guaranteeing a safe, healthy working environment ⁽⁵⁾.
- Protecting ecosystems and biodiversity.
- Constantly improving the global performance of its production facilities, by wasting and consuming less.

* See Chapter 1 "Presentation of the Group" and Chapter 3 "Social, environmental and societal information: S.E.F.P. 2018"

(1) See the three sections of the S.E.F.P. Report.

(2) See Section 1 of the S.E.F.P. Report.

(3) See Section 2 of the S.E.F.P. Report.

(4) See Section 3 of the S.E.F.P. Report.

(5) See Vicat group's Code of Ethics and the Six Key Rules of Prevention.

Vicat is a French industrial enterprise, operating in twelve countries, committed to a long-term industrial policy, and intent on respecting its environment and addressing the major issues of population and climate change. It is both rooted in history and fully modern; it is accessible and close to its markets. Its foundation is sustainable governance, stable family ownership, and the strong, passionate commitment of its employees.

ITS RESULTS

What the company gains by relying on its values and assets when its ambitions are achieved

1 CONTRIBUTING TO THE ENERGY TRANSITION ⁽⁶⁾

- ▶ Reduction of its carbon footprint.
- ▶ Delivery of innovative products to the markets and its customers.
- ▶ Development of new strategic partnerships (customers, suppliers, and scientific partners).
- ▶ Dynamic research & development programs commensurate with its resources and widespread recognition for its expertise.
- ▶ Ability to look ahead to technology, practices, and market or competitor trends.

2 HELPING CONSERVE RESOURCES ⁽⁷⁾

- ▶ Improved recycling rates.
- ▶ Improved recovery of materials and energy.

3 BEING AN INCLUSIVE BUSINESS ⁽⁸⁾

- ▶ An improved health and safety culture.
- ▶ Diversity as a factor in company performance.
- ▶ Gender equality, no wage gap.
- ▶ Enhanced multi-generational appeal.
- ▶ Team commitment.
- ▶ Guaranteed work/life balance (balanced seniority, low absentee rate, low turnover of employees).

4 PRESERVING BIODIVERSITY ⁽⁹⁾

- ▶ Restored habitats and the arrival of new species of animals and plants.
- ▶ Recognition of its contribution to conserving ecosystems and limiting the effects of deforestation.

5 SUPPORTING DEVELOPMENT IN THE COMMUNITIES ⁽¹⁰⁾

- ▶ Respect for human rights with the same resolve in every country.
- ▶ Impact of its societal actions and acclaimed philanthropic foundations.
- ▶ Support for public health policies.
- ▶ Contribution to the vitality of the communities where it operates.
- ▶ Building lasting relationships.
- ▶ Secure territorial network and regional positioning.

6 FINANCIAL PERFORMANCE ⁽¹¹⁾

Optimized asset value.
Return on capital employed.
Increased operating profitability.

(6) See Sections 1.8., 1.2., 2.1., 3.3. of the Registration Document.

(7) See Sections 2.1., 3.3. of the Registration Document

(8) See Sections 1.3., 2.2., 3.1. of the Registration Document.

(9) See Section 3.2. of the Registration Document

(10) See Sections 1.3., 2.2., 3.1. of the Registration Document.

(11) See Chapter 6 of the Registration Document.

VICAT'S OBJECTIVES

What Vicat wants to do to go even further

2



ENHANCE PUBLIC RECOGNITION OF THE LOW CARBON FOOTPRINT OF CEMENT AND ITS APPLICATIONS OVER ITS WHOLE LIFE CYCLE

- Ensuring its resistance to climate change.
- Achieving a 75% clinker rate in cement and 40% usage of alternative fuels in the energy mix (of which 15% for biomass) by 2030.



COMBATING RESOURCE DEPLETION

- Being part of the circular economy for sustainable resource management.



ZERO ACCIDENTS

- 100% of employees to undergo at least one health and safety training session by 2020.
- Achieving a frequency rate of 5 and a severity rate of 0.3 in 2020.



PROMOTING EQUAL TREATMENT AS AN ASSET IN THE COMPANY'S OVERALL PERFORMANCE

- Bringing more women into the industry.
- As from 2021, having at least one woman in the top 10 salaried positions.
- Mainstreaming the index for eradicating gender-based wage gaps by 2019.
- Giving disadvantaged groups access to jobs.
- Taking action in the disability arena.
- Supporting more projects per year in culture, health, and education.



HELPING PRESERVE BIODIVERSITY

- Welcoming biodiversity in the city with its products and on its sites, which are genuine reserves for all species.



MAXIMIZING VALUE CREATION FOR ALL STAKEHOLDERS

- Pursuing targeted organic and external growth and lasting profitability.

Vicat is an international/multi-site industrial group and a French family business that was established nearly 165 years ago. The family is a descendant of Louis Vicat, who invented artificial cement in 1817.

With its roots in history and a forward-looking ethos, its business model rests on the development of products and services for all sectors of the construction industry that are local and support the circular economy. Its corporate social responsibility engagements are translated into concrete initiatives which benefit the countries where it operates. They rest on three pillars:

- the energy and ecological transition: its cement factories are short links in the chain of the circular economy. Increasing its use of raw materials from recycling or recovery of waste generated by human activities enables us to limit its intake of natural raw materials and water resources. Alongside this, the Group has taken action to promote biodiversity and protect the ecosystems in the countries where it operates;
- the demographic transition and growing urbanization: construction materials are the foundations for the growth of intelligent cities. Cement is the material of the city of the future because it is readily available, inexpensive, easy to use and can be incorporated into different functions (connectivity tools);
- the social transition: it remains a priority for the Group to place its employees at the heart of its business as it reinforces its safety culture in all the countries where it operates. It develops a proactive and inclusive policy for employment, training and diversity based on the specific nature of each of these countries and the needs of their teams.

Building together.

This document is prepared in accordance with the provisions of article L. 225-102-1 and R. 225-105 of the French Commercial Code. Its purpose is to describe the business model, the main risks⁽¹⁾ inherent in the Vicat Group's activities, the policies and procedures implemented and the results, including a presentation of the key extra-financial performance indicators, for the year ended December 31, 2018. The methodology used to produce the Statement of Extra-Financial Performance (hereinafter the Statement) and to map its key risks is explained at the end of the document. This information was audited by Grant Thornton, an independent third-party body, whose limited assurance report is attached to this document.

The components of the performance statement which follow show that the Vicat Group's corporate social responsibility is fully-integrated into its global geographical growth strategy, its businesses and its product offering. It consists in a series of good practices aimed at reducing the environmental impact of its activities and enabling it to contribute to the environmental and energy transition needed to achieve the Sustainable Development Goals (SDGs), notably No. 9 ("Industry, Innovation, and Infrastructure"), No. 11 ("Sustainable Cities and Communities"), No. 13 ("Climate Action") and No. 15 ("Life on Land")⁽²⁾. It involves all employees, the number one ambassadors of the Group's values. Implementing this approach in each of the Group's countries furthers their socioeconomic development. As an economic player that proudly advocates responsible practices, the Vicat Group also contributes to SDGs number 5 and 8 ("Gender equality" and "Decent work and economic growth").

2.1. A sustainable solution

Its first priority is to meet the demand for construction materials and this has been the case since artificial cement was invented by Louis Vicat in 1817. As a recognized expert in its main businesses, it is aware of the importance of bringing effective, sustainable solutions to as many customers as possible. They benefit from the fruits of its R&D in a broad range of quality products which it ensures contribute to the energy transition and are guaranteed to be resilient to climate change.

2.1.1. Safe and affordable quality construction products

Product quality is important for the Vicat Group and its aim is to produce materials for the restoration - and thus enhancement - of building stock.

(1) These key risks are explained in Chapter 5 in the Registration Document and the identification and monitoring methodology note appears in section 3.5.2. of the Registration Document.

(2) In September 2015, at the United Nations Sustainable Development Summit in New York, the 193 UN Member States adopted a new 15-year program, Agenda 2030, based on the Sustainable Development Goals. These 17 global goals seek to fight against inequality, exclusion and injustice, take action on climate change and the erosion of biodiversity and put an end to extreme poverty. All stakeholders (government, citizens, non-profit organizations, private sector, public bodies and institutions) are asked to contribute to the success of Agenda 2030.

2.1.1.1. A broad range of construction solutions

Vicat Group makes and sells different categories of cement. The products on offer vary according to the maturity of the market. It manufactures different grades of concrete, from ordinary concrete to special concrete. It produces aggregates that are differentiated by chemical composition, physical qualities, size and color. You will find full details of its products in section 1.5 of this Document.

Although the availability and affordability of its products is a key concern, Vicat has built its brand image on quality and compliance with local regulations. The vast majority of the products it produces and sell comply with non-mandatory standards which define the quality and safety levels it commits to achieve.

Its products undergo regular checks by different organizations, selected according to internal or external procedures, who certify their compliance with the relevant regulations and standards.

Ensuring its products meet these standards is part of a progress and continuous improvement policy for the benefit of all involved. In Turkey, 15% of the products put on the market already have a quality label or specific certification. In France, Béton Vicat (the Group's ready-mixed concrete subsidiary) not only commits to meet the criteria of NF EN 206-1 for the ready-mixed concrete sold on that market, it also has the Guarantee of French Origin label. This label guarantees customers that all stages of ready-mixed concrete production are carried out in France and at least 50% of the unit cost price per cubic meter of ready-mixed concrete is generated there too. It illustrates its teams' customer service focus and the short chain circular economy priority of the Group's industrial policy.

2.1.1.2. Producing materials for building restoration

For the past seven years, the Group has lent its support to the Geste d'Or Association to support the different players invested in building restoration. The association holds annual awards for the best building restoration and conservation projects. Several solutions were recognized at the 8th awards ceremony of the International Cultural Heritage Show on October 24, 2018 in the "Innovation Grand Prix for Vicat and its partners" category. The first two were for innovations in France and the third in Turkey:

- SMARTUP, Ultra-High-Performance Fiber-Reinforced concrete (UHPC) for the renovation of the Grand Pont bridge in Thouaré-sur-Loire (44);
- Biosys (partnership between Vicat SA and *Vieille Matériaux*) is a building system constructed from blocks of dry-stack (tongue and groove) hempcrete blocks made from PromptUP natural cement and hemp chaff. The blocks provide the formwork and filling for a conventional reinforced concrete post and beam framing. Because they interlock without mortar or adhesive, they are faster and more efficient to use and offer exceptional alignment and

plumb. The result is a genuine single wall solution which does not require any additional insulation;

- Q-Flash 2/20 quick-dry concrete used to reconstruct the Sabiha Gökçen airport runway in Istanbul.

2.1.2. Products designed to help adapt constructions to climate change

The effects of climate change are a priority consideration for the Vicat Group, a fact borne out by the focus of its R&D and the low-carbon products it has put on the market.

2.1.2.1. Expert analysis to further the energy transition

To respond to the climate and demographic challenge, it has committed to setting up an active document watch at all levels of the organization. The work of the IPCC (Intergovernmental Panel on Climate Change) is one of the resources used.

To help decide how best it can shift to a low-carbon economy, the Vicat Group became a member of the Shift Project, a French think tank on the energy transition, composed of international experts and players from the business world. For the record, the Shift Project wrote a manifesto which calls on European countries *"to launch policies now which can achieve greenhouse gas emissions as close to zero as possible by 2050"*.

The Vicat Group also has a number of strategic partnerships led by its Louis Vicat technical center whose work is described in Chapter 1.6.4. of this Document.

It takes part in various discussion forums on environmental performance. It works with the IFPEB (the French institute for the environmental performance of buildings) to define the conditions for an ambitious and effective market-appropriate energy and environmental transformation for the real estate and construction industries.

The Vicat Group is pragmatic in its policy, taking an interest in - and contributing to - more experimental approaches.

Since 2015, the Vicat Group has been a shareholder of Transpolis SAS. The aim of this company, which has both public and private shareholders, is to build a city to serve as a laboratory for urban mobility. To this end, it has bought an 80-hectare plot of land in Ain, in the Auvergne-Rhône-Alpes region. This urban laboratory will enable the Group to work with other manufacturers on life-size testing of building solutions tailored to the mobility issues of the future. In 2018, innovative solutions for the well-being of building users were trialed during a major specifications project and a prototype of Artésys, a cladding solution for visible façades, was created.

In the final phase of the COMEPOS project for the design and construction of positive energy houses, the brainchild of the Ministry for Housing managed by the ADEME and coordinated by the French Atomic Energy Commission, the Vicat Group helped to create a new

POSITIVIX demonstrator in Auvergne (France), bringing to 15 the number of ultra-energy-efficient houses delivered. Feedback from future occupants will help to shape the forthcoming environmental regulations (on the energy consumption of individual houses) announced for 2020. As a reminder, a positive energy house is a house that can produce more energy than it consumes.

To further its open approach to innovation, in 2018 the Vicat Group joined the Ruche Industrielle, an association with firm roots in the conurbation of Lyon set up to encourage the exchange of expertise between major groups such as Bosch, Renault Trucks, Volvo, Aldes, the SNCF and SMEs.

To launch a debate on questions such as “What will our roads and cities of tomorrow look like?” “How can cement be used in the future?”, the Vicat Group created a number of events. The challenge launched by the competition for students - “How can we regenerate the city?” - illustrates its commitment to societal issues and partnerships and was recognized by the CSR prize it was awarded at Apave’s Prévision conference.

The industrial division oversees its ongoing efforts to mitigate the effects of climate change by structuring them and aligning the main thrusts of Vicat Group’s low-carbon strategy with the goal of containing global warming below a 2°C threshold by the end of the century. To do this, its research & development department has been tasked with investigating ways to:

- bring low-carbon products to market (cements with additives and cement with low-carbon clinker);
- improve its energy efficiency with physical improvements such as waste heat recovery (heat lost in the manufacturing processes and not re-used) and the development of biomass channels (to substitute for fossil fuels);
- reuse products and employ carbon-friendly solutions in the construction of new buildings and renovation of older housing;
- reuse emitted CO₂ and concrete carbonation. Together with the ATILH (Industries Technical Association of Hydraulic Binders) and IFSTAR (Institute for the Science and Technology of Transport, Development and Networks), Vicat is currently working on the national FASTCARB project for the permanent storage of CO₂ through the carbonation of recycled concrete. The aim is to speed up concrete’s ability to capture the CO₂ in the atmosphere naturally during its service and demolition phase. Initial laboratory tests show that 1 m³ of recycled concrete could capture and store up to 150 kg of CO₂ from the chimneys of the cement factory kilns. This is in addition to the saving of 650 kg of natural quarry aggregates. This system could potentially capture around 10% of the French cement industry’s emissions based on the volumes of concrete deconstructed in France each year;

- hydrogen production. Hydrogen is a carbon-free energy vector of the future which has various potential uses of interest to local operations. To strengthen its links with the local community, it is working with partners to investigate the options for producing hydrogen partly through the recovery of the waste heat produced by its cement factories and partly through green electricity when this is readily available. This hydrogen could then be used for sustainable mobility by injecting it directly into the vehicles or using it to recover the CO₂ emitted by the cement factory in the form of biogas; this biogas could then be made available to local operations through the existing gas grid.

Vicat Group’s business units are putting together new service proposals based on circular economy principles. In France, the service offering is now available under the Vicat CirculEre brand. It is based on reducing the usage of mineral and energy resources, ensuring optimum product/application adaptability and exploiting the complementarity of its Cement, Concrete & Aggregates lines by creating multimodal platforms;

2.1.2.2. Developing low-carbon products

The Vicat Group is making every effort to design suitable products to meet the climate and demographic challenges it faces. The Group applies ecodesign principles to all its development projects. The Vicat Group continues to analyze the life cycle of its products to quantify their “cradle-to-grave” impact. This is a multi-criteria approach which involves inventoring every material and energy input and output at each stage of the product lifecycle. In France, the Group uses the BETie (BEton Impacts Environnementaux) configurator devised by France’s national professional association for the ready-mixed concrete industry (*Syndicat professionnel National du béton prêt à l’Emploi*) to generate the environmental and health declarations for its customers.

Vicat contribute by developing new cements which emit less CO₂ and construction materials and systems which help to improve the energy efficiency of the buildings or infrastructures (See section 1.6 of this Document). Anticipating low-carbon approaches is a driving force in its industrial innovations and a key component of Vicat’s new offerings in France. the Group is developing a range of concrete specially for 3D printing which meets the requirements of each application: the right concrete for the right place. As part of the Viliaprint project launched by Plurial Novilia (a subsidiary of Action Logement) to build social housing that fully-incorporates 3D printing technology, R&D teams have developed a material which when deconstructed in liquid form can be used for printing by laying down successive layers. Another example is the development of a range of pervious concrete products combining mechanical resistance and hydraulic performance to temporarily retain rainwater and return it gradually into the natural environment. These could be used for urban development projects. With over 1,000 new products throughout Europe, Vicat’s natural quick-setting cement places it as a key player in the bio-sourced construction industry.

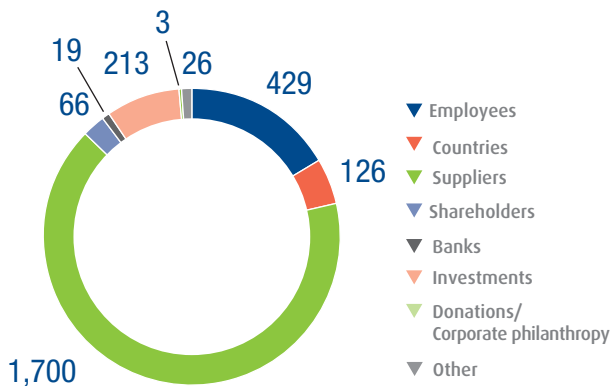
2.1.3. Sustainable employment to strengthen ties with the communities where Vicat operates

The Vicat Group is a key player in the materials industry (products and services) in the countries in which it operates. It contributes actively to local development by generating direct and indirect sustainable employment and through a considerable training effort for its employees, to guarantee their employability.

2.1.3.1. Sharing value created throughout its markets through local hiring

As part of its recruitment policy, the Group prioritizes hiring local people and sharing the value created by means of a fair compensation policy. The diagram below shows the breakdown of consolidated sales revenues for the Group's main stakeholders as of December 31, 2018. Compensation represents 16.6% of this breakdown.

SHARE OF VALUE
CONSOLIDATED SALES REVENUE: € 2,582 MILLION



The indicators below translate the results of the Group's strategy, i.e.:

- a diversified geographical distribution of its workforce with strong regional positions (recruiting local talent);
- a breakdown of its workforce by activity with cement being the highest employer;
- compensation schemes guaranteeing equity through recognition of performance, equal treatment of men and women and no discrimination.

General changes in the workforce

As at December 31, 2018, the Group employed 8,884 staff.

Hires and departures

Type of workforce changes in 2018

(number of employees)	Workforce
Workforce at December 31, 2017	8,460
Natural attrition	(824)
Redundancies	(456)
Changes in consolidation scope	44
Recruitment	1,620
WORKFORCE AS AT DECEMBER 31, 2018	8,844

As at December 31, 2018, the Group had 8,844 staff compared to 8,460 a year earlier. This 4.5% increase can be explained by the continued growth of the workforce in France (up 4.9% between 2017 and 2018), development of the Aggregates activity in Senegal (up 8.5% between 2017 and 2018) and the insourcing of clinker production in the Egyptian cement factory (+27.7% between 2017 and 2018). The increase in the workforce in France also resulted from the new positions created to serve its customers and stakeholders and face up to the challenges of the 21st century (the energy transition, circular economy, digital, etc. See section 2.3.1. of this Document).

The change in scope (+44 employees) can be explained by acquisitions aimed at strengthening the Group's position in its preferred geographical areas. In France, the transport activity acquired Transport Dubois (+28 people). In Switzerland, it took over PriMa Rent and RMZ (+14 people).

In addition, France continued with its apprentice recruitment policy, increasing their number by 28% between 2017 and 2018 and by nearly 50% over a two-year period.

The Group's global hires increased by 24.4% between 2017 (1,302) and 2018 (1,620), while global departures stagnated between 2017 (1,281) and 2018 (1,280).

The Group's departure rate fell between 2017 (15.2%) and 2018 (14%), reflecting our ability to retain staff in a period of increased activity and competition in the employment market.

The departures resulted mainly from natural departures and adaptation of organizations to the economic situation in each market.

A significant number of staff joining or leaving the Group held posts linked to the seasonal nature of the Group's business activities, especially in France and Turkey. In addition, Turkey, India and Kazakhstan recorded a typically high turnover of 8.1%, although this is considered low for these countries.

Breakdown of the workforce by geographical area

The workforce comprises local personnel. New staff are generally hired from the catchment areas in which the Group operates.

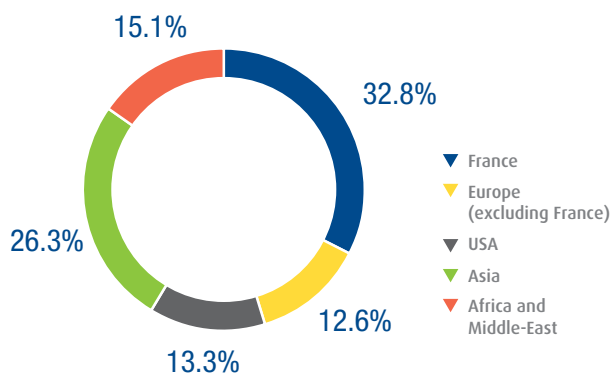
Group headcount as at December 31, 2018 by geographical area

(number of employees)	2018	2017	Change (as a percentage)
France	2,874	2,741	+4.9%
Europe (excluding France)	1,146	1,130	+1.4%
United States	1,172	1,140	+2.8%
Asia	2,255	2,228	+1.2%
Africa & the Middle East	1,397	1,221	+14.4%
TOTAL	8,844	8,460	+4.5%

Average Group workforce in 2018 by geographical area

(as a percentage)	2018	2017	Change (as a percentage)
France	2,845	2,751	+3.4%
Europe (excluding France)	1,091	1,075	+1.5%
United States	1,155	1,112	+3.9%
Asia	2,282	2,253	+1.3%
Africa & the Middle East	1,311	1,155	+13.5%
TOTAL	8,684	8,346	+4.0%

BREAKDOWN OF THE GROUP'S AVERAGE NUMBER OF EMPLOYEES IN 2018 BY GEOGRAPHICAL AREA [in %]



The Group had an average of 8,684 employees in 2018, up from 8,346 employees in 2017, an increase of 4.0%. This increase reflects the Group's growth in emerging countries and the economic recovery in developed countries:

- the Asia region thus saw its average number of employees rise by 1.3% in one year. Growth in the average number of employees in India (up 5.2% between 2017 and 2018, after an increase of 8.7% between 2016 and 2017) was due to the continued commitments of the Bharathi and Kalburgi factories to the employment of the local population. Between 2017 and 2018, the average number of employees in Turkey fell by 1.1% due to the country's decreased activity. The 3.3% decrease between 2017 and 2018 for Kazakhstan reflects efforts to optimize the local organization;
- for the Africa & Middle East region, the 13.5% increase between 2017 and 2018 was due to the insourcing of clinker production in Egypt (+26.4% of the average number of employees) and the increase of the average number of employees in Senegal (up 8.0% between 2017 and 2018). Senegal faced a conflicting situation: the average number of employees in the Cement business fell by 1.9% (mainly due to better organization at the cement factory in Rufisque), while the average number of employees in the Aggregates business rose by 19.3% due to higher production capacity and stronger sales;
- in the United States, the 3.9% growth in the average number of employees between 2017 and 2018 was due to the recruitment of drivers for the Concrete business to meet demand as the construction sector recovered;
- the average number of employees in Switzerland rose by 1.4% over the period because of acquisitions in the transport activity;
- in Italy the average number of employees remained stable with the arrival of one extra employee for the Italian Prompt market;
- between 2017 and 2018, the average number of employees in France continued to rise (+3.4%) due to growth in its markets in 2018 (Grand Paris projects, etc.).

Breakdown of the workforce by business segment and professional category

Group headcount as at December 31, 2018 and change

	Cement	Concrete & Aggregates	Other Income & Services	Total
Executives	1,000	330	242	1,572
White-collar staff	1,424	921	412	2,757
Blue-collar staff	1,595	2,015	905	4,515
TOTAL	4,019	3,266	1,559	8,844

The breakdown of the workforce by business segment reflects the development of the Group's operations, particularly in the Cement business in Turkey, India and Egypt, and in Concrete and Aggregates in the United States and Senegal respectively:

- in 2018, the Group's workforce in the Cement business accounted for the largest share at 45.4% of the total headcount (against 45.7% in 2017).

The Concrete & Aggregates business remained stable between 2017 and 2018 (36.9% in 2018 and 37% in 2017).

The Other Products & Services business showed very little change: 17.6% in 2018 versus 17.3% of the total workforce in 2017;

- in 2018 blue-collar staff continued to increase, reaching 51.1% of the total workforce (50.5% in 2017) reflecting the increase of the Group's industrial production, mainly in Senegal and Egypt.

The share of white-collar staff decreased further to 31.2% in 2018 versus 31.8% in 2017 (proportionality effect).

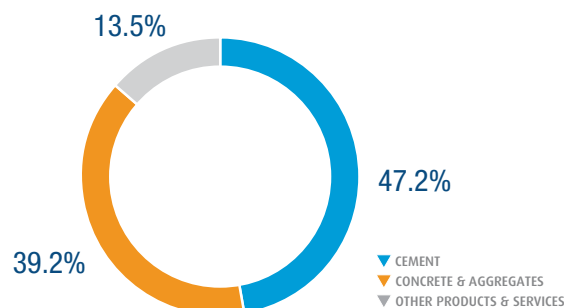
The share of executives remained virtually unchanged at 17.8% (17.7% in 2017).

Average Group workforce and changes

(number of employees)	2018	2017	Change (%)
Cement	4,103	3,906	+5.0%
Concrete & Aggregates	3,406	3,308	+3.0%
Other income & Services	1,175	1,132	+3.8%
TOTAL	8,684	8,346	+4.0%

The changes between 2017 and 2018 in the average number of employees in the Cement business (+5.0%), Concrete and Aggregates (+3.0%) and the Other Products & Services business (+3.8%) are consistent with those of the year-end workforce.

BREAKDOWN OF THE AVERAGE WORKFORCE IN 2018 [in %]



Compensation policy

REMUNERATION SCHEMES

The Group's remuneration policy is based on rewarding individual and joint performance and securing team loyalty. It takes into account the culture, macroeconomic conditions, employment market characteristics, and compensation structures specific to each country.

In France, Vicat SA and its subsidiaries apply the statutory scheme for employee profit-sharing or, in some cases, operate under an exemption. Sums received are invested in the Group savings plan ("Plan d'Epargne Groupe", or PEG) and in Vicat SA shares, as applicable. In addition,

Vicat SA has put in place a profit-sharing agreement. Money paid into this arrangement can, at the employee's discretion, be invested in the Company's shares under the Group savings plan or in other savings plans offered by a leading financial institution. In 2013, a Group retirement savings plan ("Plan d'Epargne Retraite Collectif", or PERCO) was set up for employees. In order to better support employees preparing for retirement, an agreement to annually transfer a number of days defined in the CET (time savings account) and paid vacation (under certain conditions) on the PERCO entered into force in 2015. In 2018, before the PACTE law vote, almost all Group employees in France had a mandatory and/or voluntary profit-sharing agreement.

The remuneration policy places particular importance on gender equality and applies the "same salary for the same job" principle.

MINIMUM WAGE

In all countries where the Vicat Group operates, its companies do not pay salaries lower than the local statutory minimum. If there is no statutory minimum, wages paid are at least above the minimum in the local market.

CHANGE IN PERSONNEL COSTS AS AT DECEMBER 31, 2018

The Group's personnel costs increased by almost € 5 million (i.e. 1.2%) to € 428.9 million in 2018 (€ 423.9 million in 2017). This net positive balance is explained by:

- organic growth which contributed € 20.1 million to this overall increase. Organic growth covers both salary increases and the net rise in the average number of employees (+4%) between 2017 and 2018;
- exchange rate effects which reduced these expenses in euros by almost € 15 million, mainly contributed by Turkey, Egypt, Switzerland and the United States;
- the scope effect was insignificant in 2018.

In France, personnel costs increased by 6% between 2017 and 2018 due to acquisitions, organic growth of employee numbers during a period of market growth and to meet the needs of its customers and stakeholders, the challenges of the 21st century (Grand Paris, the circular economy, energy transition, digital, etc.) and significant pressure on the employment market and salaries.

Personnel costs

(in thousands of euros)	2018	2017
Salaries and wages	313,787	310,276
Social security contributions	110,756	109,670
Employee profit sharing (French companies)	4,420	4,047
Personnel costs	428,963	423,993
Average number of employees of the consolidated companies	8,684	8,346

Indirect jobs and support for local entrepreneurs

Due to the nature of its industrial operations, the Vicat Group creates numerous jobs both upstream and downstream of its production units. It is estimated that in the industrialized world for every one direct job in a cement factory, there are ten associated indirect jobs. This is particularly the case in France (data published by the “*Infociments*” website) where upstream suppliers and the whole ready-mixed concrete and precast concrete sector are linked to run a cement factory in the Group’s local network. The Group is involved in various local economic development initiatives such as the “*Alizé*” network. It chairs the Alizé Savoie approvals committee which, for 20 years, has been supporting SMEs in the region by sharing the expertise of the program’s corporate partners. At October 31, 2018, the report showed plans to create 19 additional jobs.

Often more staff are employed on production sites in developing countries than in developed countries. It is less common to outsource the support functions (maintenance, for example) because of a lack of qualified industrial infrastructure for the cement industry. The cement factory operated by Sococim Industries (Senegal) generates five indirect jobs for 1 direct job. Initiatives by the Sococim foundation help to boost activity in the Rufisque area by supporting the development of local companies (very often created by women) that rely on traditional skills in various areas such as the processing of locally-grown cereals, artisan dying and the sale of fabrics. In Kazakhstan and India, it is estimated that for every direct job there are three indirect jobs linked to the cement factories.

2.1.3.2. Supporting skills acquisition and development to guarantee employability

The Group’s ability to attract the best people and employee retention are two cornerstones of human resources policy.

Its employer brand, which reflects its culture and values, and the fact it is a family-owned, international group, makes it attractive to candidates.

Internal promotion is favored where possible. The objective is to offer everyone career development prospects that allow them to realize their ambitions and their full potential. Mobility, both operational and geographical, is one of the conditions of this progression.

The aim of the Group’s human resources policy is to ensure that the individual and collective skills of staff are in line with the Group’s strategy on a short-, medium- and long-term basis. Thus it is its intention that, for digital, 50% of the team is, and will be, made up of employees who have in-depth knowledge of the internal organizations and processes, which will be supplemented by “digital” training.

In 2018, the Group’s training program focused on health and safety in the workplace, environment, team performance (management, change management, ethics and anti-corruption under the Sapin law, for example), industrial performance and business performance. There is also regular ongoing energy transition, circular economy and digital training.

In France, the Group maintains an internal training institute for its Cement and Concrete and Aggregates businesses, the “*Ecole du Ciment, du Béton et des Granulats*”, which is housed within its subsidiary Sigma Béton. Training courses are developed and delivered by drawing on in-house technical expertise.

In 2018, the Group successfully continued the multi-year program launched in 2013 relating to specifications and sales activities with pilot teams from its various businesses.

Taking advantage of the arrival of the internal strategy and customer development consultant, all business units in France introduced sales force training.

The objective of all training is also to enable employees to adapt to constant changes in their roles, businesses and markets, and to ensure their employability.

These training initiatives naturally help to keep employee performance and engagement high.

Training indicators *

	2018	2017	Change (as a percentage)
Number of hours of training	142,025	146,048	-2.8%
Number of employees having attended at least one training course	5,438	4,956	+9.7%

* This analysis was carried out on a sample representing 96% of the workforce, as data on recent changes in scope are not yet available.

The decrease in training hours between 2018 and 2017 was mainly due to the end of the Indian training plan for communities living near Group cement factories (Local Employment Plan) that was hailed a success. People who received training acquired the skills and knowledge needed to access long-term employment and career prospects in the industry.

This decrease should not overshadow the commitment of departments, corporate partners and teams to training development as a key to success.

In 2018, 61.5% of the teams received at least one training course versus 58.6% in 2017. The 9.7% increase in the number of employees who attended at least one training session between 2017 and 2018 is due to the increase in the Group’s average number of employees and demonstrates its willingness to train new hires and all employees regardless of their background.

Some countries played a particularly significant part in improving the key training performance indicators in 2018, including:

- the United States, which reported a 30.3% rise in training hours, linked to the need for health and safety at work training after hiring less experienced drivers (lack of candidates with experience) in the Concrete business, and the need for ethics training in 2018;

- France, which still has the highest number of training hours (37.4% of the Group total), saw this indicator grow by a further 12.8% between 2017 and 2018, with a 16.3% rise in the number of employees who attended at least one training course.

2.2. Delivering a service

Because of the excellent relationships of trust the Group has forged with its local communities, customers and employees, it is today a fully-fledged circular economy player, committed to bringing the benefits to its customers, and an inclusive company promoting diversity, taking a stance against discrimination and supporting the development of the countries where it operates.

2.2.1. Global offerings and innovative solutions as part of a circular economy approach

Because of its long-established industrial expertise and strong local roots, the Vicat Group can offer solutions for the recovery of materials and energies available in the countries where it operates, while reducing their respective environmental footprints. By pursuing its circular economy policy, it aims to contribute to the preservation of this shared capital of natural resources, ensuring it is not depleted but rather its value grows for all stakeholders.

2.2.1.1. Recovering the materials and energies at its local sites

Its circular economy approach

Strategic choices made some time ago have formed the backbone of the Vicat Group's circular economy approach. These include:

- **the careful selection of raw materials based on their local availability and reducing transport distances.**

Access to resources (materials and energy) is a vital concern for the Vicat Group. Land reserves, and their preservation, are strategic for its continued existence. Thus, through sustainable management of the natural resources used in manufacturing processes, Vicat plays its part in local land management.

The main raw materials used in its processes are natural and mineral, and therefore extracted from the immediate environment (see section 1.5 of this Document);

- **the use, as far as possible, of alternative raw materials** which are available locally, either waste or recycled materials; while considering the resources used in its activities as a whole to see whether the quantities used could be reduced through circular economy initiatives.

The Group identifies potential sources and uses them as a basis for targeted circular economy initiatives. These may be supply contracts with waste producers or the provision of platforms for temporary storage of their waste for future use as a resource. In doing this, Vicat strengthens the synergies between the industrial fabric and the local economy. In France, thanks to actions undertaken locally by each of its cement factories (the use of short local supply chains) to effectively remove barriers to the circular economy, the French Cement Industry Union (*Syndicat Français de l'Industrie Cimentière-SFIC*) has awarded Vicat with the Green Deal partner status. They will allow to translate its commitment to green growth into concrete actions by recycling wood waste from construction in the cement factories. These initiatives are supported by the government whose targets are set out in the energy transition and green growth act; namely, to halve the amount of waste sent to landfill by 2025, to increase renewable energy consumption by 23% by 2020 and 32% by 2030, and lastly - by significantly increasing the amount of energy generated from waste - to ensure that France is self-sufficient in energy and reduces fossil fuel consumption by 30% between 2012 and 2030. At the 4th *Trophées de l'Economie* in June 2018, Vicat was awarded the "Company in Transition" award in the "Large Companies" category by the Secretary of State to the Minister for the Ecological and Inclusive Transition;

- **commit to recover energy from waste at cement factories to be an alternative to fossil fuels;**
- **invest in technologies to circularize the value chains**, such as the commissioning of the *gasifier* at the Créchy cement factory in France.

Today, it is because it can rethink how to create value for its customers, and offer them added value, that it can bring them new, increasingly innovative, service offerings using local loops. The Group does this by

transforming waste produced locally into construction materials that are also used locally without ultimately creating other non-recovered waste.

In France, the Vicat CirculEre offering is helping project managers and customers recover as much waste as possible from decontamination and demolition sites (primarily during the restoration of old industrial wasteland) and convert them into industrial products such as cement, aggregates and concrete. At POLLUTEC 2018, Vicat Eco-valorisation was relaunched as Vicat CirculEre, an offering available to the countries in which Vicat operates. This global offering permits the use of contaminated soil as an alternative to natural materials (limestone and marl). It is recovered and enters into the cement matrix, i.e. the contaminated soil is made into cement to be used to reconstruct the same site! - Inert soil can be recovered from its quarries - concrete waste can be turned into recycled aggregates for use in the formulation of concrete or road sub-layers. Site waste such as wood from demolition sites can be used as an alternative to fossil fuels. In some cases, Vicat Group recovers virtually 100% of the waste produced at a local site

and then supplies eco-design industrial products to the reconstruction industry (cement or concrete).

As an international multi-site group, Vicat can deploy its circular economy approach in the countries where it operates and thereby instill a radically different approach to the management of natural resources in line with its sustainable development targets. Although the circular economy often begins locally, the associated challenges are global. The prevailing issue is how to meet the needs of 7 billion people worldwide with limited natural resources if all countries are not developed according to more environmentally-friendly and socially inclusive models. This is the thinking behind the “*Rufisque Marché Propre*” program, for example, relaunched by the Sococim foundation in Senegal with the aim of collecting waste from the market and recovering it at the local cement factory. Under this program, 8.5 tons of waste were recovered in 2018. A similar initiative was launched in India in April 2018 to teach inhabitants in the villages of Chatrasala and Kherchkhed, close to the Kalburgi factory in Karnataka state, how to collect and sort waste. 23 tons of dry waste was sold to the cement factory and the 7 tons of organic waste were composted.

Change in the Group's material consumption

Breakdown of materials consumed

<i>(in millions of tons)</i>		2018	2017	2016
Clinker	Raw materials	29.2	29.2	28.4
	of which % of alternative materials	5.0%	4.4%	2.7%
Cement	Raw materials added	4.2	4.1	3.9
	Total % of alternative materials used in the cement	10.5%	8.5%	6.9%
Aggregates	Natural raw materials	18.6	20	18.4
	of which % of alternative materials	3.8%	2.2%	2.5%
TOTAL	RAW MATERIALS OF WHICH % OF ALTERNATIVE MATERIALS	52 6.4%	53.4 5.3%	50.7 4.4%

The materials recovered for use as alternatives to natural raw materials include:

- **for clinker manufacture:** fuel ashes, calcium, aluminum or iron oxides with the addition of silica or contaminated soil;
 - **for cement manufacture:** sulfo or phosphogypsums, quarry mineral waste, ash, blast furnace slag, kiln or bypass filter dust;
- As part of the European SERAMCO (Secondary Raw Materials for Concrete Precast Products) project, the Vicat Group has successfully conducted an initial trial, at the Créchy factory (France), on the use of crushed concrete fines from demolition sites in cement manufacture. The SERAMCO project targets the recycling of concrete and other materials from demolition sites into prefabricated concrete products and cement;
- **for aggregates:** returned fresh concrete or demolition.

Change of alternatives used in the Vicat Group's cement energy mix

Many years ago Vicat group adopted an ambitious policy to replace traditional fossil fuels with alternative fuels. Such fuels are, for example, recovered solid fuel, tires, oils, solvents or other industrial liquid waste which must be treated. The Group also continues to expand its use of crushed waste from biomass sources.

Replacing conventional fuels also helps reduce the Group's intake of natural resources, which has an important leverage effect in reducing CO₂ emissions.

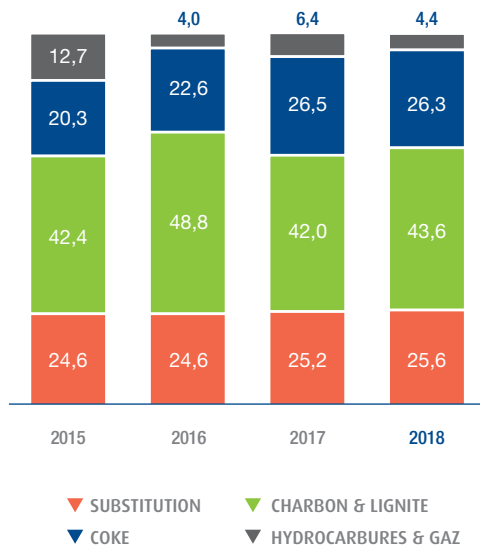
It aims for an energy mix that is diversified, low-carbon and more local, more efficient and more sustainable. The Group is closely monitoring the transformation of traditional energy supply systems in the countries in which it operates. Sococim Industries,

the Group's Senegal subsidiary, commissioned Urbasolar to build Africa's largest "off-grid, tracker operated" solar plant to supply the Rufisque cement factory. Covering 14 hectares, the plant should reduce the site's CO₂ emissions by 10 kt/year and produce 7 MWc. The Group also continues to use the photovoltaic panels installed on the roof of its grinding plant in Fos-sur-Mer, France.

Alternative fuels in 2018 represented 25.6% of total fuel consumption by therms. The share of biomass (in value terms) remained stable at 9% of thermal energy despite a fall in biomass use in Senegal. Reuchenette (Switzerland) and Créchy (France), the Group's most advanced factories in terms of fuel substitution, reported substitution rates of 87.3% and 77% respectively.

Grave de Peille received the Substitution Trophy in 2018 for the greatest increase in the use of alternative thermal energy.

CHANGE IN THE BREAKDOWN OF FUELS USED IN THE CEMENT BUSINESS (in %)



2.2.1.2. Ensuring customers use its products more efficiently

The Vicat Group firmly believes that everyone has a role to play in the circular economy to combat the depletion of natural resources. It strives to strengthen this link with its customers even further by working with them right from the design stage of its products/services to better meet their needs and move towards customization. The right concrete in the right place is the inspiration behind its activity-wide innovative solution strategy which offers customers and project managers a range of

solutions adapted to the ecology and energy transition. Its Co-efficiency approach means working with its customers to develop innovations not just in materials but also in innovative construction systems such as the Biosys hempcrete block, the first biosourced block under the ATEX directive.

Vicat helps companies in the countries where it operates to increase the portion of recycled materials used in their projects. Working with all public and private stakeholders, it makes it a duty to assess the whole construction chain to identify resources which can be sourced from the local area with the proper logistics. The Group has therefore decided to choose the most fuel-efficient transport solutions available for its sites by starting to renew its fleet with hydrogen trucks at its Transport SATM subsidiary and oxygen truck mixers at Béton Vicat, a ready-mixed concrete subsidiary.

2.2.2. An inclusive company

The Vicat Group continues to adopt an inclusive approach both in its policies for employees and those for local residents in the countries in which it operates. These policies include diversity and anti-discrimination initiatives and reflect a desire for stable employment by offering permanent contracts to 94% of the employees. In France, almost 95% of employees have a permanent contract (from a base that includes apprentices and temporary workers).

Vicat also supports many education, cultural learning, success through sport and health initiatives for local residents.

2.2.2.1. Promoting diversity and equal treatment

Human resources policies are framed by adherence to and promotion of the values that underpin the Group's culture. They take into account social transition issues.

An intergenerational policy for employees, jobs and skills

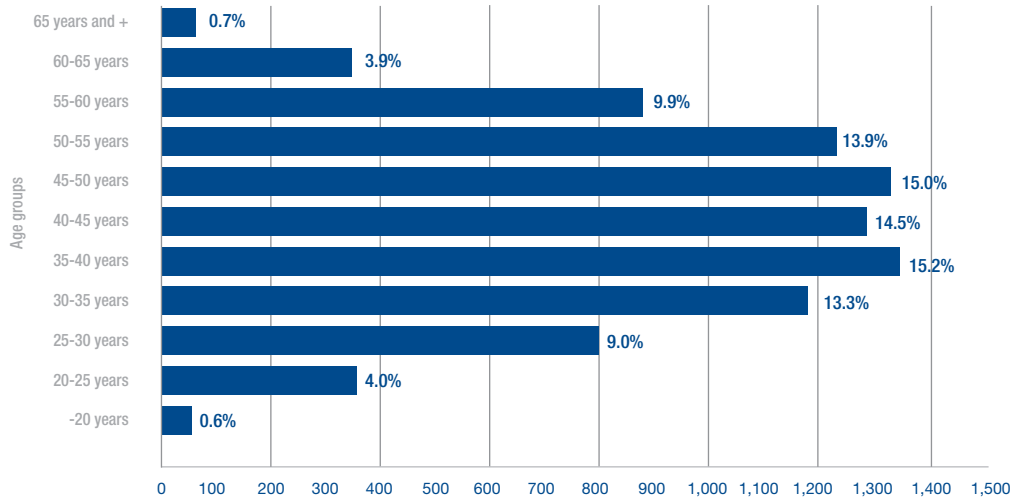
Recruitment, training, compensation and promotion policies stipulate that the Group cannot discriminate against an employee or applicant on the grounds of age.

The profile of young people and seniors hired in 2018 is evidence of the success of these policies. The health and safety at work policy driven by management, and covering conditions at work, promotes career-long employability.

New hires receive in-work training, thus benefiting from the skills and knowledge of most experienced employees.

In France, to contribute to the training pathways in the materials industry, the 2020 target is for 5% of its workforce to be apprentices, aiming for an equal number of males and females.

AGE PYRAMID AS AT DECEMBER 31, 2018



In 2018 as in 2017, the Group maintained a balanced age pyramid.

The number of employees under 35 remained proportionately higher in Kazakhstan (46.5%), India (44%), Turkey (34%) and Egypt (25%). It remained stable at 26.9% of the Group's workforce in 2018 (26.9% in 2017).

The percentage of Group employees over 50 remained stable at 28.4% in 2018 compared to 28.3% in 2017, with a significant proportion in Switzerland (43.5% in 2018), the United States (41.4% in 2018) and France (32.7% in 2018). This stability also confirms the absence of a policy that encourages the departure of older workers and discriminates against this category.

In preparation for the impact of retirements, the Group ensures that there is a handover phase with recruitment for the effective transfer of knowledge and life skills between generations.

Change in average length of service and average age of the Group's workforce

	Average age		Average years of service	
	2018	2017	2018	2017
GROUP	42.5	42.9	9.6	10.0
<i>of which France</i>	<i>43.6</i>	<i>44.1</i>	<i>13.5</i>	<i>13.5</i>

The cumulative stability in average age within the Group (42.5 in 2018, versus 42.9 in 2017) and in seniority (9.6 in 2018, versus 10.0 in 2017) reflects the overall stability of the workforce and the Group's commitment towards responsible, long-term employment.

Measures to promote the employment of people alienated from the jobs market

Vicat has an active policy to recruit and train people alienated from the employment market in the countries in which it operates. For example, in India almost 400 villagers (often illiterate and uneducated) were trained then hired to work at the Kalburgi and Bharathi cement factories.

In 2018, the Vicat Group accepted France's President Emmanuel Macron's invitation to join the P.A.Q.T.E (*Pacte avec les Quartiers pour toutes les Entreprises*), a commitment by companies to work to help residents in disadvantaged city neighborhoods, led by Julien de Normandie, France's Minister for Cities and Housing. The aim of this national program is to offer jobs and training to young people from underprivileged areas.

Its partnership with the Sport dans la Ville association is another example of the initiatives already in place. After in-house training, people from disadvantaged neighborhoods are offered permanent batch plant operators positions.

Vicat joined a study on the condition of female seniors in the employment market, launched by Marlène Schiappa, Secretary of State for Gender Equality. This is further evidence of its commitment to include women of any age and from any background in the workforce.

Measures to promote the integration of disabled people

Whenever conditions allow, the Vicat Group applies a proactive policy in relation to the employment of disabled people.

Group companies thus employ disabled workers directly, through contacts with specialist organizations.

In France, the Group's approach is supported by the Disabled Persons' Occupational Integration Fund Management Association (abbreviated AGEFIPH in French).

Adjustments in the workplace, either by arranging working hours (reduction or adaptation of working hours), or by adapting workstations (ergonomic arrangements in terms of task content, training, etc.), are also examined and put in place.

The development of subcontracting to companies and organizations that specifically employ people with disabilities (*secondment* of disabled employees within Group companies, provision of services, such as maintenance of green spaces, removal of certain types of waste, etc.) is another solution employed.

The Vicat Group continued its involvement in initiatives promoting social integration through employment, in cooperation with the relevant local services. For example, Papeteries de Vizille in Isère (an industrial site in France), called upon the services of a sheltered employment center (ESAT) that was commissioned to support a team of 6 disabled workers in the finishing workshop. In France, disabled employees represented 2.6% of the workforce in 2018 (*versus* 3.1% in 2017).

Since 2014, the Group has consolidated SODICAPEI, a company specialized in mining operations and the sale of bauxite, whose packaging plant employs ten disabled people on permanent contracts, through an innovative, sustainable company benefit (medical cover, pension, etc.) and social recognition policy.

In 2018, entering a partnership with l'Officiel du Handicap, Vicat became the official sponsor of the next national Dialogue on Employment and Training of people with disabilities ceremony (now in its 9th year), due to take place in spring 2019 under the patronage of the French President. This illustrates Vicat's desire to strengthen its commitment to employing people with disabilities.

This policy is also successful outside France, especially in Turkey. Disabled employees represent close to 2.6% of the Group's workforce in Turkey.

Measures to promote gender equality

The Vicat Group recognizes the positive impact of women in its business. Gender equality remains one of the basic elements of its human resources policy and performance. Measures appropriate to each country are adopted to ensure equal access to jobs and training and equal treatment in terms of remuneration and promotion between men and women.

These results are achieved despite the constraints due to the industrial nature of Vicat's business and jobs. Because of prejudice, industrial jobs remain very much the preserve of men. Blue-collar jobs account for 51% of the total workforce and only 2% of these jobs are held by women. The result is the low proportion of women (10.4% in 2018) in the salaried workforce.

The Group has always striven to overcome these obstacles. For example, early on the Group understood that innovation, the cornerstone of its history and its strategy, requires the presence of female employees. The Group's R&D and marketing teams thus comprise a majority of women (including in leadership positions).

Back in 2016, an action plan was launched in the Group countries where female employment is traditionally low to recruit women to these positions, thereby demonstrating that Vicat was prepared to break with the norms.

In 2018, the Group stepped up its action to "ungender" the positions in the minds of (internal and external) recruitment personnel and the applicants themselves. In France, there is a systematic requirement to include women among the candidates put forward for positions traditionally held by men. This applies to internships, work study/apprenticeships and fixed-term, permanent and temporary posts.

The Group is working to improve the ergonomics of the workstations and their equipment. Due to the lack of women on training courses leading to jobs in industry (engineering, for example), it is developing apprenticeships for young girls.

Through teamwork, coaching, training sessions and the sharing of best practices, the objectives are to identify female talent, improve women's performance, accelerate their leadership maturity, their awareness of their specific qualities, style and roles as leaders (a strong leadership characteristic within the Vicat Group) and to lower external and internal obstacles to giving key positions to women.

To further the quest to include more women in the workforce, Vicat has joined several networks "*Femmes et Leadership*", "*Femmes et Entrepreneuriat*" and "*Entreprises pour l'Egalité*", including in French-speaking Africa the "*Forum international des pays francophones d'Afrique sur le leadership féminin*". The Sococim foundation, operated under the technical supervision of Senegal's Ministry for Women, Families and Gender, supports the Group's policy to recognize the role of women in business. In 2018, Vicat took part in the "*Femmes et développement local*" [Women and Local Development] panel at the 1st economic and social forum organized by Rufisque on the key theme of "Set up in Rufisque, land of the future".

Recruitment and internal promotions (also the result of a training policy for women) are concrete examples of the success of the Group initiatives.

The Vicat Group pays particular attention to the equal treatment of women and men. With regard to salary, the Vicat SA Compensation Committee noted that in 2018, as in 2017, the difference in average compensation of upper management between men and women with equal qualifications is very low (between 0.1% and 0.2%, depending on category, in 2018). In France in 2018, a special budget, in addition to the Global Increase and Individual Increase budgets, was allocated to increase the salaries of female employees in the event of male/female wage discrimination. The budget was barely used.

For example, a “line by line” evaluation of Vicat led to the salaries of three women and three men being brought into line out of a total workforce of almost 700. These results illustrate Vicat’s parity policy driven by promotion on merit.

As a Group recognized for its work to support gender equality, in 2018 Vicat took part in the test panel of companies to establish the “gender equality index”, a key public policy measure aimed at eradicating the gender pay gap. Muriel Pénicaud, France’s Employment Minister, recognized Vicat’s leading role in this by inviting its Chairman and Chief Executive Officer, Guy Sidos, to speak about the initiatives run and results obtained at the presentation of the index. Its Chairman and Chief Executive Officer has opted to roll out this index to all the Group’s foreign entities starting in 2019.

In 2018, for the first time in the history of the Group, no doubt also a first for the French industry for a company of its size, a woman held the position of central union representative for the main union (*Délégué Syndical Central Force Ouvrière*).

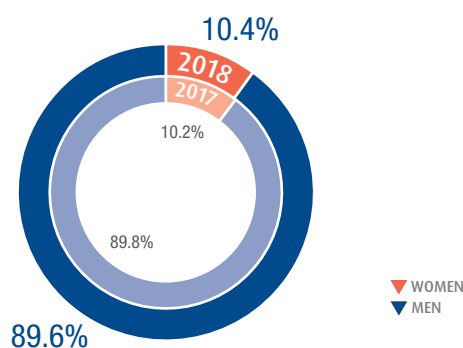
In addition, Vicat’s management decided to set up an employee representative to the Board of Directors from 2016, even though the law did not require it until 2018. Given the quality of employment relations, naturally the Works Council’s method of appointment was used. The Works Council’s choice was a female employee and management welcomed this decision.

Its gender equality record helped the Group further improve its ranking in the list of SBF 120 companies with increased female representation on their Boards, climbing to 23rd in 2018 (from 28th in 2017). The list is produced by the office of the French Secretary of State for Gender Equality. The Group received a special “Innovation” award in 2017 for appointing the youngest director in the SBF 120 (Eléonore Sidos, who was 19 in 2017). With this appointment to its Board of Directors, the Group has set an example for young female talent to fast-track towards gaining intensive professional experience and taking on significant responsibilities to prepare them for future senior management roles.

Workforce as at December 31, 2018 by gender, category, average age, and average length of service

(number of employees)	Including				Average age	Average years of service
	Total	Executives	White-collar staff	Blue-collar staff		
Men	7,920	1,361	2,138	4,421	42.6	9.7
Women	924	211	619	94	41.8	9.4
TOTAL	8,844	1,572	2,757	4,515	42.5	9.6

CHANGE IN THE WORKFORCE BY GENDER AS AT DECEMBER 31



Female employees as a percentage of the Group’s total workforce

	2018	2017
Executives	13.4%	13.0%
White-collar staff	22.5%	22.0%
Blue-collar staff	2.1%	1.8%
TOTAL	10.4%	10.2%

Female employees as a percentage of the Group’s workforce in France

	2018	2017
Executives	25.2%	23.9%
White-collar staff	25.7%	25.0%
Blue-collar staff	2.5%	2.4%
TOTAL	18.0%	17.3%

The percentage of women employed by the Group was virtually unchanged as at December 31, 2018, at 10.4%, compared with 10.2% a year earlier. This can be explained by the increase in the number of

blue-collar workers, who are nearly all men in Egypt and Senegal, and the low number of women in other countries, which hides the effects of the Group's commitment towards increasing this proportion significantly each year.

In France, the employment of women rose to 18.0% in 2018, as compared with 17.3% in 2017. With a female workforce of 22.7% and 17.4% respectively, Kazakhstan and Italy still come top, with France, for the percentage of women employed.

The percentage of female executives in the Group also improved, rising from 13.4% in 2018 to 13.0% in 2017. In France, the percentage of female executives also increased to 25.2% as at December 31, 2018 (compared with 23.9% in 2017). Excluding acquisitions in 2017, in 2018 women accounted for 34% of hires to management positions in France.

2.2.2.2. Access to vital education and health services

The Vicat group is an economic player that supports the development of the countries where it operates through a large number of local resident initiatives. Access to education, culture awareness, health prevention and success through sport are key priorities. Its strong links with the local communities ensures these initiatives are successful and sustainable. They are driven by the different local managers but are also widely supported and implemented by all employees who give their time.

In education

Vicat's actions target all levels of education, from primary school to university, and support local government policies. They relate to the improvement of learning conditions (supply of materials for maintaining or building the institutions for students), supply of equipment (from IT tools to office equipment), granting of scholarships and reception of interns so that they can learn about the Group's businesses.

In India, in addition to providing large quantities of school supplies for pupils in neighboring schools, the Vicat Group supports a literacy program that was followed by 75 women.

In Senegal, the Sococim foundation renewed its support for the local association for the protection of mentally-handicapped children, the "*Association Sénégalaise pour la Protection des Enfants Déficients Mentaux*". In 2018, four children received training specially adapted to their needs at the Aminata Mbaye center which is the administrative headquarters for the association.

In France, the Louis Vicat Foundation sponsored an educational project at the Lycée Louis Vicat de Souillac, a secondary school in the Lot Department in France that specializes in the building trades. Vicat has entered a long-term partnership with the Catholic University of Lyon (UCLy). The Group works alongside architecture and engineering schools to pass on knowledge of its businesses and to develop joint projects on research and innovation. One such example is the partnership with ESTP, a specialized civil engineering school, in Paris.

In cultural learning

The discovery of music is a key component of the initiatives of the Group and its foundations. In Senegal, the Sococim foundation sponsored "*La loge des Poètes*" concert by the Rufisque rapper it has been supporting for several years. In Turkey, Bastas Ciment subsidiary renews its support for the Elmadag cultural center each year. In France, the Louis Vicat foundation supported the Berlioz Festival which takes place in Isère and also gave a donation to the Lyon Military Governor's 11th concert in benefit of French soldiers injured during foreign operations. Classical music is also brought to the La Fauchère quarry in Souvigny in the Allier department.

The Group's CSR initiative also encompasses access to reading. In 2018, the Sococim foundation financed the expansion of the documentary resources of its Maurice Gueye Cultural Center (Senegal). Vicat supported the 42nd International Comic Strip Festival International in Chambéry (Savoie).

One of Vicat's heritage initiatives involved the purchase of the house in Souillac where Louis Vicat lived and discovered artificial cement. The aim is to bring it back to life, obtain "*Maison des Illustres*" [house of the famous] status and open it to the public. The Louis Vicat foundation helped to fund ICOMOS France (International Committee for monuments and sites) submission n°29 entitled Concrete Architecture in the Alps. ICOMOS is an NGO established in 1965 after adoption of the Venice Charter for the conservation and restoration of monuments and sites. ICOMOS provides the World Heritage Committee with valuations of assets of cultural value put forward for inclusion on the World Heritage List, as well as comparative studies, technical assistance and reports on the state of preservation of the sites already listed.

In sport

The Group sponsors several sports clubs in the countries where it operates. Given its local roots in the Lyon area and its particular focus on the development of women's sport, the Vicat Group has solid, sustainable ties with the Olympique Lyonnais women's soccer team.

For the International Beaujolais Marathon, the success enjoyed by the large contingent of French employees in 2017 was repeated in 2018, as even more participants take part under the slogan "Let's build together". NCC Alabama, a US subsidiary, was involved in the construction of a baseball stadium for the city of Ragland in the USA.

In health care and the environment

The Group works hard to facilitate access to local health care (regular malaria prevention programs, opening of clinics to local populations, free access to certain kinds of care, free transport offered by the cement factory's ambulance, contributions to local hospitals), particularly in the most fragile communities.

To tackle major public health issues, the Group sets up a medical and social center in the village of Chatrasala, close to Kalburgi cement factory in India. Since it opened, the number of consultations has been increasing consistently. In 2018, 8,000 consultations were recorded.

In April 2018, SATM, a French subsidiary, gave retired drivers more than 1,000 liters of free fuel to enable a convoy of humanitarian aid to leave Romagnieu (in Isère) for Macedonia to help the Athens refugees. It has been supporting these expeditions for over 20 years.

2.2.3. Business ethics

In light of the corruption that is affecting both developed and emerging countries, the Vicat Group has resolved, in all the countries where it operates, to conduct its businesses in strict compliance with its Code of ethics and Codes of good conduct, which have been designed for application across different fields. Its procurement policy is a perfect example of its commitment to corporate social responsibility, promoting responsible and sustainable purchasing.

2.2.3.1. Preventing the risks of corruption and ensuring fair practices

Preventing the risks of corruption

The Vicat group refers to its Code of ethics to prevent the risks of corruption. This sets out the values embraced by the Vicat Group and which have underpinned its success and continued existence since 1853. Fairness and respect for people and the environment have allowed Vicat to conduct its business with integrity, honesty and transparency. The Code reflects the Group's commitment to respect its partners, whether they are suppliers, service providers, customers, employees or the local community.

The Code promotes respect for women and men, society and the environment. In it, the Vicat Group affirms that respect for laws and regulations is an essential and indispensable requirement. It pledges to uphold the ethical principles enshrined in the Code and calls on the support of its employees to help it achieve this. To be more proactive in this area, the Group uses the skills of a Chief Compliance Officer.

The Group reviews its corruption risk map on a yearly basis. Its website features a whistleblower procedure. It delivers classroom-based and e-learning anti-corruption training (fulfilling the requirements of the French Sapin II law). It is driving the implementation of an anti-corruption code of conduct. It is endeavoring to tighten its accounting controls.

It has introduced a third-party assessment procedure and set out a system of disciplinary sanctions, including the dismissal of employees found guilty of acts of corruption. These initiatives are monitored on a regular basis.

Ensuring fair practices

The Vicat Group regularly organizes training courses and audits on competitive practices. These training courses are primarily intended for operational management and sales executives. They are delivered by attorneys or consultants specializing in competition law.

2.2.3.2. Promoting sustainable purchasing throughout its value chain

The Vicat Group gives priority to local purchases wherever possible, in order to limit the environmental footprint of its purchases while increasing the development of the local economic fabric.

Contracts drawn up by the Group's Procurement Department require its partners to confirm their adherence to the main principles of international law set by the International Labor Organization on non-discrimination, the ban on forced labor or child labor.

In each of its purchasing procedures, the Group also applies an approach which takes into account not only economic factors, but social, societal and environmental factors as well. This approach is implemented directly by the procurement units of the Group's subsidiaries.

The Group is committed to working with leading suppliers which have adopted the principles of CSR and international standards on sustainable development.

The development of a purchasing policy and the organizational development of the Group, which is embedded within a wider grouping of companies through the provision of supplies, sales and logistics, require innovative approaches and dialog. The Vicat Group's challenge is therefore to align its CSR objectives with its purchasing policy to make its production system a vehicle for change. To that end, the Group asks its subcontractors and suppliers to commit to "complying with laws and regulations and human rights as set out in international rules and conventions".

The Group's draft general purchasing procedure, which follows on from the actions described above, is currently the subject of a consultation process with all internal stakeholders.

2.3. Production in the best conditions

The Vicat Group is determined to implement a long-term industrial policy that respects personal integrity, is environmentally friendly and recognizes the major demographic, climate-related and ecological challenges ⁽¹⁾ by guaranteeing the implementation of optimum working conditions to achieve its target of zero accidents as well as optimum production conditions, thereby reducing its environmental footprint and CO₂ emissions.

2.3.1. Respect for personal integrity

By putting its employees first, the Vicat Group has engendered a passionate and firm commitment from its staff. It enters into constructive dialog, enabling it to maintain high-quality employment relations and ensure a healthy and safe working environment.

2.3.1.1. Maintaining high-quality employee relations

Compliance with international conventions

The values held by the Vicat Group, and shared with all its stakeholders, have forged its strong corporate culture. This corporate culture gives rise to respect in relations with others, solidarity between teams, the inclination to lead by example, a capacity to mobilize energies, and the wherewithal to take strong action on the ground to achieve objectives.

The Group complies with the rules of law in the countries where it operates in accordance with the principles of the United Nations Human Rights Charter which states as follows: *"business should support and respect the protection of internationally proclaimed human rights within their sphere of influence and make sure they are not complicit in human right abuses"*. All countries where the Group operates are signatories to the United Nations Human Rights Charter and are members of the International Labor Organization. Respect for the principles and fundamental labor rights enumerated in the Declaration related to freedom of association and acknowledgement of the right to collective bargaining, the elimination of all forms of forced or mandatory labor, the abolition of child labor and the elimination of employment and professional discrimination is the subject of particular attention within each company of the Group.

In Senegal, on the 70th anniversary of the Universal Declaration of Human Rights, the Sococim foundation supported an exhibition and workshops for schoolchildren in Rufisque.

In France, training sessions for managers are frequently organized with a law firm specialized in current employment law, with a focus on professional equality, ethics, and preventing bullying or discrimination as part of their day-to-day responsibilities.

At the instigation of Group Management, entities in India, Kazakhstan and Senegal have each put in place a code of conduct complying with World Bank standards. Management in India is very sensitive to child protection and has regular, unannounced monthly audits conducted to check that no children are working on the Group's sites.

Proof of such compliance is found in the audits conducted by various local authorities, none of which revealed any failure to observe applicable laws and regulations in 2018.

Putting employees at the heart of corporate dialog

All Vicat Group companies comply with local laws on respect for freedom of association and the right to collective bargaining, and respect for the right of employees to information and consultation.

Social dialogue works well within the various companies. Management, which is direct, close to the workforce and open to discussion with staff, is a key success factor in maintaining social dialogue and good employee relations.

In terms of results, in 2018 there were no strike days recorded at the Group's companies. No Group company was the subject of a complaint or conviction for sexual harassment or bullying, discrimination or infringement of freedom of association. No significant event occurred to endanger this dialog or employee relations, with the exception of the security situation in the Sinai Peninsula (Egypt) where it has a cement factory.

For 2018, the scope adopted for the "Review of collective bargaining agreements" indicator was limited to France. A total of 17 agreements were signed during this period.

In France, under the law of December 24, 2018, bringing in the emergency economic and social measures decided by the President of the French Republic, the Chairman and Chief Executive Officer, Guy Sidos, after consultation with labor partners, decided to grant a € 400 bonus, which is within the agreed compensation threshold. This measure applies to almost 80% of the workforce in France.

(1) Please refer to the methodology shown in section 2.5.2 of this document – see Chapter 5 of the Registration Document, "Risk factors and internal control".

ABSENTEEISM

Another indicator of the quality of the labor environment is the absenteeism rate. Absenteeism is monitored in each country in order to identify the reasons and take appropriate action. In 2018, the Vicat Group deemed this indicator satisfactory. It varies between 0% and 6.1%, depending on the country. France is average, with 4.65%.

Proposing an employee-centered work organization

The Vicat Group's organization reflects its performance objectives. The chain of command is short and the number of levels in the hierarchy reduced to operational requirements. Management is direct and local. Teams have real autonomy, driven by their commitment and sense of responsibility.

PART-TIME WORK**Workforce as at December 31, 2018 by contract type/category**

	Cement	Concrete & Aggregates	Other income & Services	Total
FULL-TIME EMPLOYEES	3,982	3,179	1,477	8,638
Executives	992	324	228	1,544
White-collar staff	1,400	877	360	2,637
Blue-collar staff	1,590	1,978	889	4,457
PART-TIME EMPLOYEES	35	89	82	206
Executives	6	7	14	27
White-collar staff	24	45	52	121
Blue-collar staff	5	37	16	58
TOTAL	4,017	3,268	1,559	8,844
Part-time employees (as a percentage)	0.9%	2.7%	5.3%	2.3%

The Group has little need for part-time jobs. As at December 31, 2018, the percentage of part-time employees remained low at 2.3% of the workforce (virtually unchanged from 2.3% in 2017 and 2.3% in 2017).

As in 2017, many more part-time staff were employed in Other Products & Services (5.3% in 2018) and Concrete and Aggregates (2.7% in 2018) than in Cement (0.9% in 2018).

Part-time staff are employed to varying degrees in the following countries only: Switzerland (11.9%) and France (2.5%).

SHIFT WORKING

Part of the Group's industrial business requires shift working. The statutory framework is systematically adhered to. In 2018, shift workers accounted for 21.4% of the Group's workforce, up from 2017 due to a higher number of blue-collar staff resulting from hires in Egypt and Senegal.

Work is organized in compliance with local legislation, and with the Group's own standards, in terms of working and resting time as well as health and safety. This work organization is designed to deliver the best performance from teams at the lowest cost. New approaches such as teleworking are being studied.

The Group is attentive to the quality of working conditions for its teams, workplace health and safety, and working well together according to the Group's culture and values, emphasizing the importance of mutual respect, independence and accountability.

The organization into relatively small and manageable teams has always fostered best practice within the Group, such as continuous improvement and the "free-form company".

2.3.1.2. Guaranteeing a safe and healthy working environment**Ongoing improvements in health and safety conditions at work**

Protecting the health of all employees and guaranteeing their "physical and mental safety" has been a key priority for the Vicat Group for many years now. This not only extends to the well-being of its teams, but also to temporary staff and companies participating on a subcontracting basis. At all its sites around the world, the Group strives to improve working and living conditions, health and safety, in accordance with laws and regulations in force. The Group is implementing prevention measures to eliminate or reduce risks, and to lower the frequency and severity of workplace accidents and occupational illnesses.

Aware of the fact that improvements in working conditions and in the health and safety of its employees are only made possible by changes in human behavior, the Group is continuing to strengthen and roll out its safety culture, maintaining its single objective of “Zero accidents” (for its staff and staff from external companies). It therefore strengthened its health and safety policy by placing emphasis on leading by example, rigor and commitment for its managers and employees. Since its introduction in 2015, the effectiveness of this policy has been reflected in a very significant and ongoing improvement in its safety outcomes. In 2018, the Group recorded an improvement in its health and safety results and set a new record for accident frequency rates of 6.2, down from 8.1 in 2017. This improvement was due to high-performing countries, particularly Switzerland, which halved its frequency rate and to the increasing number of sites that are already on target, such as Konya Hazir Béton in Turkey which has had over 3 years with no lost-time accidents.

Prevention measures are monitored in multi-year plans. They include:

- staff training, the organization of awareness campaigns and the preparation of communication materials relating to the “Zero Accidents” objective and how to achieve it. Team training and awareness remain a major focus for risk prevention within the Group.

For example, the training initiative which started in France in 2017, continued in 2018 for managers across all businesses. All supervisors were trained by a well-known specialist organization on concrete issues such as accident prevention dialog, safety briefings and on-site health and safety inspections.

As a result, regional safety days are organized every year to stimulate ideas, raise awareness, improve day-to-day behaviors and share best practice. This is also an opportunity for staff to report any hazardous situations to do with issues around health and safety in the workplace. To take this one step further and make safety part of the daily routine, meetings are preceded by a safety update, and managers give weekly safety briefings.

For example, the issues addressed include risk analysis, equipment logs, travel, manual handling, phone use, working at heights, and tidiness and cleanliness of facilities.

The extensive addiction prevention campaign (alcohol, drugs and prescription medicines) launched in France in 2017, continued to be rolled out and will be completed in 2019 across all sites. Training and awareness-raising will be carried out for everyone in the organization: managers, staff representatives and all employees;

- the availability of risk-appropriate collective and personal protective equipment for teams (employees and subcontractors) at all of the Group’s sites;

- the upgrading of facilities to match with regulatory and technical changes, taking into account the opinion of the experts consulted (in collaboration with safety engineers representing the Group’s insurers, in particular). The instructions for each business are in the safety standards;

- the improvement of risk prevention, interventions with external businesses for all the businesses and sites.

In France, Cement manufacturing sites apply the Company Safety Assurance Manual (MASE). This approach aims to make external companies subject to the same rules on training, induction (particularly, safety induction), equipment, operating procedures and organization.

Led by General Management and the managers of the Group, a team of health and safety in the workplace coordinators in all countries and for all businesses is responsible for implementing and managing these plans. They are mainly developed locally and across the different businesses by its employees. One of the best examples is the adoption of the “Essentials”; six rules defined by the Safety Department and developed at country and business levels, constituting the basic points used on a daily basis at the sites. In 2018, teams worked hard to re-energize and inject greater urgency into these six unavoidable rules, now deemed essential.

In 2018, Management systematically took part in cross-cutting internal safety audits reflecting the strength of its involvement and its unswerving commitment to achieve the “Zero Accidents” target. Cross-cutting audits present an opportunity for reasoned discussions on site between teams to prevent and eliminate risk. All topics are reviewed: equipment, organization, regulations and most importantly behavior. This is an ideal time to share solutions and best practices.

The approach on health and safety at work fosters synergies between teams, businesses, and countries. Exchanges and meetings with the Group’s safety specialists contribute to and encourage the sharing of experiences and best practices. Accident reports, audit reports, awareness materials, communication tools and all documents pertaining to prevention, health and safety are contained within a networked database, which may be accessed by safety specialists and managers.

Every year, in April, the Group takes part in the World Day for Safety and Health at Work. The day aims principally to foster a workplace health and safety culture for all sites, businesses and countries. It provides an opportunity for staff to think about and discuss a chosen theme. “*Prévention des TMS*” (prevention of musculoskeletal disorders) was the topic under consideration on April 26, 2018. These annual events are important for team-building so that employees can progress “together” towards the “zero accidents” target.

Throughout the year, the Safety Department organizes quarterly awareness campaigns which are implemented in all countries. Safety briefing materials (posters and leaflets) are translated into all languages, enabling managers to raise staff awareness of key issues such as, for example, the prevention of sexist attitudes in 2018.

The Group expanded and enhanced its training program for employees likely to travel abroad for business purposes and for expatriate staff (e-learning modules made mandatory before all business travel) as well as its support and assistance measures, in collaboration with AXA International, a firm whose expertise in the areas of health, safety and security for people traveling or working abroad is well-known.

Through its commitment to the health and safety of all its teams, the Vicat Group is building the future.

Agreements signed with unions concerning workplace health and safety

The Group works with all staff, and in particular with employee representatives, to improve accident prevention and safety at its sites and safeguard the health of employees. The agreements signed reflect this objective shared by General Management and labor partners in this area. The support and active participation of labor partners, and their support for the health and safety approach, has helped to develop the safety culture and improve performances.

Results recorded by all subsidiaries in terms of workplace safety

The Group's key safety indicators, particularly the number of lost-time accidents and the frequency rate, showed a massive improvement in 2018 and reflect the Group's commitment and efforts in relation to Health and Safety. There was a significant drop in the frequency rate, which fell to 6.2 in 2018 (a 23% reduction from 2017). The number of lost-time accidents within the Group was down 23% from the previous year and has halved in just 5 years. The 2018 severity rate was 0.34, up slightly from the 2017 rate (0.31). This higher severity rate was due to accidents that occurred in France at the beginning of the year, leading to lengthy work stoppages, and several accidents that occurred in 2017, with stoppages continuing into 2018. In the majority of cases, employees taking time off after an accident are able to return to work in the next few weeks. Accidents requiring more lengthy periods of time off are very rare.

The improvement in frequency rate in 2018 was mainly due to the ever-increasing number of Group sites reporting no lost-time accidents. For example, six of the Group's cement factories recorded no lost-time accidents in 2018; some had not reported any for two or three years (Bharathi, Jambyl Cement, Créchy and Peille). In the Aggregates business in France, some regions have not recorded any lost-time accidents for over 4 years. Businesses in Mali and Italy have also not recorded any lost-time accidents for over 3 years.

In 2018, several countries saw a remarkable improvement in their safety performance: Switzerland halved its number of lost-time accidents, with a frequency rate down from 20.0 to 9.0 (-55%) and Turkey consolidated its 2017 performance by recording a frequency rate of 6.8, down from 7.4 in 2017 (-9%).

	Group		
<i>For Group employees *</i>	2018	2017	Change
Number of lost-time accidents among Group employees	106	138	-23%
Number of fatal accidents among Group employees	1	1	0%
Number of lost days for Group employees	5,759	5,342	+8%
Frequency rate	6.2	8.1	-23%
Severity rate	0.34	0.31	+8%

	Cement		
<i>For Group employees *</i>	2018	2017	Change
Number of lost-time accidents among employees	28	29	-4%
Number of fatal accidents among employees	0	0	0%
Frequency rate	3.7	3.8	-3%
Severity rate	0.14	0.16	-13%

	Concrete & Aggregates, Other Products & Services		
<i>For Group employees *</i>	2018	2017	Change
Number of lost-time accidents among employees	78	109	-28%
Number of fatal accidents among employees	1	1	0%
Frequency rate	8.3	11.6	-28%
Severity rate	0.50	0.40	+13%

* These analyses were carried out on a sample of around 96% of the workforce, as data on recent changes in scope are not yet available for these indicators.

2.3.2. Protecting ecosystems and biodiversity

Being aware of its role in protecting biodiversity at its sites, the Vicat Group has, for a long time now, deployed a series of best practices serving as inspiration for all stakeholders. Welcoming biodiversity at its sites is one of the Group's objectives. Forests, an ecosystem in their own right, are covered by a sustainable management program, adopted recently.

2.3.2.1. Sustainably managing its forests

Sustainably managing its forests is an area of improvement in which the Group is closely involved as a major landowner, particularly in France. This approach fits perfectly within Sustainable Development Goal No. 15 (SDG 15). Based on forestry surveys conducted by independent experts, the Group put in place an action plan to develop and maintain its forestry assets with a view to their sustainable management if possible, as part of its circular economy approach to produce wood energy for its business needs and underscore its connection to the local area by supporting the timber industry (forestry experts and growers).

In France, it was estimated that Vicat SA owned 1,778 hectares of forest in 2018. 67% was managed under nine simple management plans and the remaining surface area was managed using existing tools, such as quarry restoration plans (planting of truffle oaks with production control) or logging easements for third parties. The first results of the study requested by the Group and conducted by the French National Forestry Ownership Center (CNPF) to estimate forest carbon stocks under simple management plans, suggested that around 835,860 t CO₂ is already locked into all sections of Vicat SA's forests (above-ground and below-ground biomass, dead wood, understorey vegetation, top soil and leaf litter).

The Sococim Foundation supported reforestation activities as part of a research program in the Sahel in Senegal developed by the summer school organized by the International Joint Unit "Environment, Health, Societies" in cooperation with the National Agency of the Great Green Wall.

Another 20,123 trees were planted at Vicat Group sites in 2018.

2.3.2.2. Welcoming biodiversity at its sites

The Group's commitment to the protection and preservation of biodiversity has its origins in the operational history of its quarries. While quarrying has an impact on natural habitats, quarries also contribute, under programs rolled by sites on a local basis, to the creation of new habitats conducive to numerous species of fauna and flora.

The design and implementation of these programs by multidisciplinary teams demonstrates the Group's desire for the smooth integration of its businesses into the local landscape. Although these programs are closely linked to the sites' operational phasing plan, they encourage the adoption of innovative measures, where restoration plans often go beyond regulatory requirements. Around 30% of sites have a natural restoration plan.

These programs essentially identify *in-situ* measures but do not exclude occasions when it proves necessary to implement offset programs or even to create voluntary biodiversity reserves. This has been the

Group's preferred option in the area surrounding some of its quarries, particularly the Mèpieu quarry in France and the Steiner-les Boveresses quarry in Switzerland.

Without quarries or cement works, some ecological offsetting work would probably never have been considered. This is true of the Ecological Offset Measures (MCE) program, created when the Tschanner quarry was opened in Switzerland, driven and rolled out by Vigier Ciment management since the Millennium. These measures now cover an area of nearly 10 km² of mountain forests, wooded pastures, prairies and rough grazing land where some animal and plant species were under threat. In practice, they create forest clearings to provide a home for upland birds, and patches of old growth. In wooded pastures, they open up abandoned areas and reintroduce copses or hedges. 31 hectares of prairie and pastureland have been restored.

The Group's involvement in, and experience of, protecting biodiversity is widely shared, both internally and externally. The Vicat Group is a member of the Natural Capital Accounting Workshop of the business and Biodiversity Platform, which is part of the 2011-2020 European Biodiversity Strategy. In 2018, it took part in workshops on the subject of the biodiversity footprint of projects or products and attended the "roadmap to positive impact" plenary conference. By providing access to its Enieu quarry until 2019, the Group has, for the last two years, contributed to a study of certain species known to be excellent indicators of habitat quality as defined by protocols based on standard models developed by the National History Museum. The Odyssee initiative continues to provide habitats to save wild bees from developers. In 2018, this initiative led the way for a second conservation orchard with 43 trees planted over a 3,500 m² surface area in conjunction with the Croqueurs de Pommes organization and the installation on quarry and concrete batching plant sites of 15 Odyssee planters. The use of a new type of concrete in the manufacture of this planter is being trialled in partnership with the INRA. Its presentation at various trade fairs such as the Biomim' Expo was key for future innovations in the world of construction.

Group employees are made aware of and are involved in these species conservation programs. They are also informed about best practice and encouraged to form local partnerships for biodiversity protection. The release of the "Information on Tschanner ecological offsetting" booklet in June 2018, the organization of the 2nd "*Je cultive mon entrée de carrière pour mes visiteurs*" competition and the 4th Ecophilipole event as well as its partnership with FRAPNA for the International International Nature Film Festival, all serve to inform this dialog.

2.3.3. Ongoing improvement in the global performance of its production facilities

Being committed to sustainable construction, the Vicat Group set up an operational organization that reflects its commitment to continuously improving its industrial and environmental performance which have always gone hand in hand. Its performances are assessed both in terms of its specific consumption levels and its emissions. The Vicat Group is focusing its efforts on reducing its CO₂ emissions

2.3.3.1. An operational structure committed to sustainable production

The human and physical resources in place

Mindful of the consequences of its activities on the environment, the Vicat Group takes measures to prevent environmental risks and complies with the environmental regulations applicable to its businesses.

In 2018, the provisions and guarantees in respect of environmental risks were shown in the Group's consolidated financial statements (note 15). At December 31, 2018, they represented € 49.6 million (unchanged from 2017). Total investments related to the environment amounted to € 17.4 million (against € 18.1 million in 2017). One example was the construction of the new Mumbai terminal in India, in response to the region's growing demand for cement. The terminal can ship 1.2 million tonnes of cement a year by rail. Another is the "POM" solution introduced to improve the environmental (waste reduction) and technical (greater process stability and cleaner channels) performances of paper machines at the Vizille paper mills in France.

Its organizational model is based on the "Plan-Do-Check-Act" principle. All employees are involved in the Vicat Group's environmental responsibility initiative. The management systems deployed by the Group's various entities, such as ISO 9001, enable it to guarantee strict application of environmental regulations as notified by administrative authorizations, operating permits and/or local licenses. Each branch of activity has its own network of recognized experts in the field of health, safety and the environment. Their task is to measure, evaluate and prevent significant impacts on the basis of relevant indicators comparable with international standards and to propose any corrective

measures to be taken. These indicators are an integral parameter for the production program and for the management and performance of the installations. The achievement of the goals set for each key indicator is regularly discussed during monthly or annual reporting, as well as by management. These indicators are verified through internal and external audit. The Group follows a number of environmental best practice guidelines which it also distributes. It has signed up for various recognized quality and environmental certifications.

Maintaining a constant dialog with its stakeholders

The Group's environmental performance is linked to its ability to engage its stakeholders throughout its value chain. Its continuous improvement approach is not, in fact, the preserve of experts or of Group management, but an issue that is genuinely shared both internally and externally. Stakeholders include all parties interested in the business and decisions of the Vicat Group.

The Group has developed a regular and constructive dialogue with its stakeholders at the local and national level in each of the countries in which it operates. Political institutions, central governments, economic players, community groups, researchers, universities, students, local residents, everyone has a role to play.

In 2018, the topics covered included the role played by Vicat's production facilities in the local communities where they operate and safeguarding jobs, establishing a circular economy and recycling culture, and innovation in support of sustainable construction.

The Group relies on all organizational measures in order to have a dialogue with the local communities of its production units such as organized public meetings throughout operations and site monitoring committees. When not required by law, this type of committee is put into place through voluntary action, as in India where the Group's subsidiaries established an "official complaint resolution system" that brings together employees and members of the village twice a month to discuss and resolve any problems that may have arisen. All matters submitted to this procedure are entered in a register duly signed by all parties in attendance at the meeting.

The Group encourages its sites to open their doors to stakeholders to emphasize their links with the local community. In France, the Montalieu-Vercieu cement factory received more than 99 visits during the year.

2.3.3.2. Producing by managing the land footprint and consumption and by emitting less

Environmental indicators specific to its activities are summarized in the “Extra-financial performance in figures” table at the end of this chapter.

2.3.3.2.1. Managing its land footprint and consumption

LAND FOOTPRINT AND WASTE MANAGEMENT

The Vicat Group surveys all land in use by its business activities (industrial sites, offices, quarries, forests, agricultural land), whether leased or owned. The Group takes care that the sites of its cement plants, quarries and concrete batching plants are kept clean and well integrated into their surroundings. In response to the artificialization of land primarily to the detriment of agricultural areas, Granulats Vicat, the group’s French subsidiary, launched a trial in partnership with the Institut National de la Recherche Agronomique and the Institut Supérieur d’Agriculture Rhône-Alpes, with the aim of developing a new growing medium known as Terrexcellia.

The Vicat Group’s activities produce little waste. Any waste they produce is mostly recycled within the plant in the manufacture of its products.

Water use in 2018 (in m³ and %)

	Cement	Aggregates	Concrete	Other income & Services
Total water requirement (in thousands of m ³)	25,695	13,746	1,832	1,857
Percentage recycled (in %)	67%	79%	2%	15%
Net intake (in thousands of m ³)	8,535	2,881	1,418	1,577
Environmental discharges (in thousands of m ³)	4,667	573	3	1,524
Effective consumption (in thousands of m ³)	3,778	2,880	1,415	53

ENERGY CONSUMPTION

More than any of the Group’s other processes (crushing, grinding, sifting, mixing, conveyer belts, ventilation, drying etc.) the Cement manufacturing business is very energy intensive, in terms of both electricity and thermal energy. Electricity is used for transporting the materials inside the factories for the crushing and grinding operations, while thermal energy is consumed mainly when firing the clinker.

This is why improving the energy efficiency and performance of its processes is key to the energy transition to which the Vicat Group is committed. Its industrial policy consists of ongoing work on production facilities from their design to their operation, to minimize their energy consumption.

In 2018, Vigier, a Vicat Group subsidiary in Switzerland, succeeded in converting a 58-ton dumper, diesel-powered rolling stock used to transport limestone, into a battery-powered e-dumper which can climb

Remaining waste is treated appropriately in dedicated pathways, in accordance with regulations.

WATER CONSUMPTION AND WASTE

The Group economically manages the water entering into its processes, by promoting recycling and by ensuring discharge of the least amount of water and the quality of the water discharged into the natural environment:

- **in the Cement business line**, water is used to cool gases before they are treated through filtration. A large part of the water required is used for cooling the bearings in rotary equipment (bearings in the kiln or grinding mills). The use of closed loops enables the recycling of more than 65% of total water used;
- **in the Concrete business line**, each cubic meter of concrete produced uses 169 liters of water, perfectly in line with international best practice and well below the 350 liters/m³ set by French regulations;
- **in the Aggregates business line**, recycling systems enable nearly 80% of the total water requirement for cleaning to be recovered. The specific consumption per tonne of aggregate produced was, on average, 147 liters in 2018.

the quarry slopes up to 20 times a day in full autonomy. Its batteries have full charge on descent and are then recharged using braking energy recovery technology. The electricity produced is sufficient to power the empty truck (named Lynx) to climb back up to the extraction area.

An energy management system described by ISO 50001 has also been implemented in its French cement factories in La Grave de Peille, Montalieu-Vercieu and de Xeuilley. The process also involves a five-year energy saving plan. These plants, in addition to the Bastas Cimento plan in Turkey, have had their ISO 50001 certification confirmed.

The improved heat balance of its rotary kilns was due to its decision to invest in the best available technology for its industrial firing systems. In 2018, the thermal balance was 3,458 GJ/ton, down 2% from 2017 (3,530 GJ/ton). For electricity consumption, which is linked to the grinding of raw materials or clinker, the technical ratio is 101 kWh/ton of cement product (obtained by adding the amount of clinker produced

to the amount of cement additives). This ratio has improved by 1% compared with the previous year, placing the Vicat Group in the middle of the international benchmark range.

Electricity consumption at the production sites consolidated in this report (cement factories, quarries, concrete batching plants, paper mills and precast concrete plants) was 2,340 GWh or 8,426 TJ.

Change in electricity consumption at the Group's production sites (in GWh)

	2018	2017	2016
Cement	2,230	2,231	2,216
Aggregates	45.8	47.8	47.9
Concrete	27	28.5	23.3
Other income & Services	41.4	44.4	44.7
TOTAL	2,340	2,352	2,332

Emissions in tons and specific emissions

	Number of kilns assessed *	Emissions (tons)		Emissions (grams/tons of Clinker)	
		2018	2017	2017	2016
Dust	22	994	56	72	100
SO _x	22	3,698	207	218	203
NO _x	22	19,599	1,099	972	1,092

* The Vicat Group has a total of 21 artificial cement kilns and one natural quick-setting cement kiln

Dust

In its main industrial activity, the production of clinker and cement, the Vicat Group always places a great deal of importance on its filtration systems for chimney emissions likely to impact air quality.

The impact assessment includes chimneys and not merely firing lines so as to take into account emissions from cooler chimneys and, where applicable, those on bypass filters. Thus, the rotary kiln system is considered as a whole.

The Vicat Group thus ensures specific levels of dust emissions from its cement factory kilns that are among the lowest in the industry. In 2018, the drop in dust emissions was due to regular maintenance of filters in cement factories.

2.3.3.2.2. Measuring the significant impacts of its activities on atmospheric emissions

MEASURING THE QUALITY OF DISCHARGES FROM ITS CEMENT FACTORIES

The cement industry has pioneered the use of high-performance measuring instruments to monitor the impact of its atmospheric emissions and shared indicators to monitor their performance.

Like most players in the cement industry, the Vicat Group has opted to monitor its performance on the basis of indicators developed by the CSI (*Cement Sustainability Initiative*), an industry association of the *World Business Council for Sustainable Development* (WBCSD). The parameters monitored in terms of atmospheric emissions are:

- CO₂ emissions for monitoring greenhouse gases having a potential impact on climate change;
- dust emissions, which are one of the main indicators of good kiln operation and one of the main historic impacts of cement factories;
- NO_x (nitrogen oxide) and SO_x (sulfur oxide) emissions as discharges having an impact on atmospheric acidification.

In the case of dust, NO_x and SO_x discharges, the situation in 2018 was as follows:

SO_x emissions

In the case of SO_x, the main emissions come from pyritic sulfurs in the raw material. In France, so as to move towards emissions levels reflecting the best techniques available (BAT-AELs), absorbent injection systems have been installed at the cement plants of La Pérelle and Xeuilley. The slight variation recorded for this parameter in 2018 was only due to the variation in sulfur content which fluctuates in line with deposits.

NO_x emissions

NO_x emissions were up slightly due mainly to the drop in biomass at the Rufisque cement factory in Senegal.

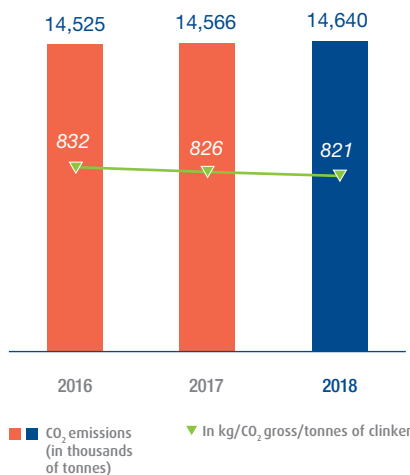
BY CALCULATING ITS CO₂ IMPACT

CO₂ impact of clinker production

All the rigorous monitoring carried out by the Vicat Group showed that its CO₂ impact essentially derives from its Cement business. Direct CO₂ emissions (from the burning of fossil fuels and the decarbonation of raw materials) from its cement factories are the main performance indicator in terms of gross CO₂ emissions. Moreover, sectoral studies performed by the cement industry show that only CO₂ is to be taken into consideration when monitoring the effect of greenhouse gases. The proportion of emissions of other gases (methane, nitrogen protoxyde, fluorinated gases, etc.) is marginal:

- in France, CO₂ emissions from the Group's French factories are subject to quotas under the European *Exchange Trade System* (ETS) which is now in phase III (2013-2020). They specifically apply to the five artificial cement factories, to the kilns for natural quick-setting cement, and to the paper mill. Accurate and reliable emissions monitoring is recognized by an unconditional certificate of reasonable assurance prepared and issued after verification by Bureau Veritas Certification;
- in the United States CO₂ emissions from Vicat's two cement factories in Lebec, California, and Ragland, Alabama, are covered by the monitoring and reporting systems established on the basis of the United Nations GHG Protocol. Since 2013, emissions from the Lebec factory have been subject to Assembly Bill (AB) 32, a specific regulation on greenhouse gas emissions enforced by the *California Air Resources Board* (CARB);
- in Switzerland, CO₂ emissions from its Reuchenette factory are subject to a similar accounting system to the one set by the European Union.

GROSS CO₂ EMISSIONS RELATING TO CLINKER PRODUCTION BY THE VICAT GROUP'S 22 CEMENT FACTORY KILNS



In 2018, specific CO₂ emissions amounted to 821 kg of CO₂ per ton of clinker, a reduction from 2017.

Group's CO₂ impact

The Group's total direct and indirect emissions (relating to the production and consumption of electricity) amount to around 15.9 million tons of CO₂ to which are added 565 thousand tons of CO₂ relating to the use of biomass (compared to 15.8 million tons of CO₂ in 2017 to which were added 575 thousand tons of CO₂ relating to the use of biomass).

Direct and indirect CO₂ emissions in 2018

(in thousands of tonnes)	CO ₂ total direct and indirect
Cement (or 22 rotary kilns and 4 grinding plants, including clinker production)	15,822
Concrete & Aggregates	93
Other income & Services	6.5
TOTAL	15,921

The Vicat Group is committed to reducing its CO₂ emissions and has set itself the target of achieving a 75% clinker rate in cement and a 40% (including 15% biomass) use of alternative fuels in its energy mix, by 2030.

From now on, cash cost will voluntarily include a € 30 per tonne charge for CO₂.

2.4. The Vicat Group's extra-financial performance, in figures

Social responsibility

Topic	Indicator	Scope	2018	2017	2016
Employment	Workforce at December 31	Group	8,844	8,460	8,101
	Average workforce by geographical area	Group	8,684	8,346	8,009
		France	2,845	2,751	2,440
		Europe (excluding France)	1,091	1,075	1,110
		United States	1,155	1,112	1,088
		Asia	2,282	2,253	2,226
		Africa & Middle East	1,311	1,155	1,145
	Average number of employees by business	Cement	4,103	3,906	3,813
		Concrete & Aggregates	3,406	3,308	3,030
Other Products and Services		1,175	1,132	1,166	
Change in the salaried workforce by type of movement	Natural attrition	Group	(824)	(968)	(705)
	Redundancies	Group	(456)	(313)	(114)
	Changes in consolidation scope	Group	44	338	4
	Recruitment	Group	1,620	1,302	1,208
Change in personnel costs as at December 31,	Salaries and wages (<i>in thousands of euros</i>)	Group	313,787	310,276	303,153
	Social security contributions (<i>in thousands of euros</i>)	Group	110,756	109,670	102,243
	Employee profit sharing (<i>in thousands of euros</i>)	Group French companies	4,420	4,047	4,010
	Personnel costs (<i>in thousands of euros</i>)	Group	428,963	423,993	409,406
Health and safety in the workplace *	Number of lost-time occupational accidents	Group	106	138	144
	Number of fatal accidents	Group	1	1	1
	Frequency rate	Group	6.2	8.1	8.5
	Severity rate	Group	0.34	0.31	0.26
Training *	Total number of hours of training	Group	142,025	146,048	127,042
	Number of employees having attended at least one training course (during the year)	Group	5,438	4,956	4,966
Diversity and equal treatment	Female employees as a percentage of the workforce	Group	10.4%	10.2%	10.3%
	Disabled employees	France	2.6%	3.1%	2.6%

* This analysis (relating to health, safety and training indicators) was carried out on a sample representing around 96% of the workforce, as data on recent changes in scope are not yet available.

Environmental responsibility

Topic	Indicator	Scope	2018	2017	2016
Material issues	Provisions and guarantees in respect of environmental risks <i>(in millions of euros)</i>	Group	49.6	48	48
	Environment-related investments <i>(in millions of euros)</i>	Group	17.4	18.1	17.3
Management of resources and the circular economy					
Raw materials	Quantity of unprocessed natural material extracted <i>(in millions of tons)</i>	Group	46.3	48.0	46.7
	Share of consumption from unprocessed materials	Group	93.6%	94.7%	95.0%
	Share of consumption from recycled materials	Group	6.4%	5.3%	5.0%
	Consumption of raw materials for the production of Clinker <i>(in millions of tons)</i>	Group	29.2	29.2	28.4
	Share of materials issued from alternative materials consumed in the production of cement as a %	Group	13.2%	10.7%	9.6%
Circular economy	Share of alternative fuels in the energy mix	Cement	25.6%	25.2%	24.6%
	Share of biomass in the energy mix	Cement	9%	8.9%	8.3%
Water	Total water requirement <i>(in thousands of m³)</i>	Cement	25,695	26,984	24,990
		Concrete & Aggregates	15,579	19,703	17,044
		Other Products & Services	1,857	1,952	1,940
	Percentage recycled	Cement	67%	65%	67%
		Concrete	23%	23%	24%
		Aggregates	79%	84%	82%
		Other Products & Services	15%	14%	14%
	Net intake <i>(in thousands of m³)</i>	Cement	8,535	9,483	8,192
		Concrete & Aggregates	4,299	4,492	4,125
		Other Products & Services	1,577	1,672	1,660
	Effective consumption <i>(in thousands of m³)</i>	Cement	3,778	3,860	3,596
Concrete & Aggregates		4,296	4,488	4,113	
Other Products & Services		53	58	150	

Topic	Indicator	Scope	2018	2017	2016	
Atmospheric emissions						
Dust	Dust emissions (<i>in tons/year</i>) from 22 kilns assessed	Cement	994	1,263	1,756	
	Specific dust emissions (<i>in g/t of Clinker</i>)	Cement	56	72	100	
SO ₂	SO ₂ emissions (<i>in tons/year</i>) from 22 kilns assessed	Cement	3,698	3,849	3,545	
	Specific SO ₂ emissions (<i>en g/T de clinker</i>)	Cement	207	218	203	
NO _x	NO _x emissions (<i>in tons/year</i>) from 22 kilns assessed	Cement	19,599	17,138	19,082	
	Specific NO _x emissions (<i>in g/t of clinker</i>)	Cement	1,099	972	1,092	
CO ₂	Gross emissions of CO ₂ from kilns (<i>in kt</i>)	Cement	14,640	14,566	14,525	
	Specific CO ₂ emission (<i>in kg/ton of Clinker</i>)	Cement	821	826	832	
	Direct and indirect CO ₂ emissions (<i>in kt</i>)	Group	15,921	15,812	15,740	
		Cement	15,822	15,710	15,647	
		Concrete & Aggregates	93	93.6	86.7	
Other Products & Services	6.5	8.2	6.5			
Energy consumption						
Total electricity consumption (<i>in GWh</i>)		Cement	2,230	2,231	2,216	
		Concrete & Aggregates	73	76	71	
		Other Products & Services	41	44	45	
		Group	2,340	2,352	2,332	
Heat balance of kilns (<i>in GJ/ton</i>)		Cement	3,458	3,530	3,546	
		Share of coal and lignite in the energy mix	Cement	43.6%	42.0%	48.8%
		Share of coke in the energy mix	Cement	26.3%	26.5%	22.6%
		Share of hydrocarbons (gas) in the energy mix	Cement	4.4%	6.4%	4.0%

2.5. Methodological notes

2.5.1. Methodology and scope of the Statement of Extra-Financial Performance

The data shown in the Statement of Extra-Financial Performance was gathered and consolidated on the basis of a common reference framework for all Vicat Group, entitled "Reporting Protocol for Social, Environmental and Societal Information". Each year, the Vicat Group's CSR Coordination unit, in association with the General Management, submits the reference framework to the managers responsible for each indicator or Group of indicators (social, environmental and societal) for evaluation.

In 2018, there were no changes to the rules governing the collection, control and consolidation of data, apart from those required under the provisions of article L. 225-102-1 of the French Commercial Code.

The reporting process used to compile the Statement of Extra-Financial Performance covers the full scope of consolidation, i.e. Vicat SA together with its subsidiaries and the companies it controls, as defined respectively in articles L. 233-1 and L. 233-3 of the French Commercial Code.

The data collected covers the period from January 1 through December 31. In principle, extra-financial indicators are consolidated from the date of acquisition of a site or sites until their date of disposal.

Some of the indicators may not be consolidated, provided that this absence is warranted by the data's unavailability or lack of relevance for the period in question with regard to the business activities pursued.

Environmental data are collected by business and by country and consolidated at Group level. Across all businesses, key performance indicators, focusing on materials and energy consumption, atmospheric emissions and the percentage of alternative fuel used per ton produced, are contained in a specific file according to their definition. The reporting process for the Cement business (CO₂ emissions in particular) is specifically based on the industry protocol issued by the Cement Sustainable Initiative (CSI).

Occupational health and safety data are collected by the operating entities and consolidated by the Group's Safety Department, which reports to the Human Resources Department. Among the key performance indicators monitored by the Group are, in particular, the frequency rate and the severity rate. The first measures the frequency of work-related accidents with work stoppage in relation to the working hours of the entire workforce. It is calculated as follows: (number of occupational accidents with work stoppage X 1,000,000)/number of hours worked. The severity rate allows the Group to evaluate the seriousness of work accidents based on the numbers of days lost as compared with hours worked. It is calculated as follows: (number of days lost X 1,000)/number of hours worked.

Workforce-related data are collected by the legal entities. The data are then consolidated by the Human Resources Department using a form designed to follow the specific internal workforce-related reporting guidelines.

Grant Thornton, an independent third-party firm accredited by COFRAC and which has been appointed to verify data provided by the Group, carries out a review of the Vicat Group's guidelines and reporting procedures as part of its mission.

2.5.2. Methodology used to identify material extra-financial risks

Extra-financial risk management is incorporated into overall risk management. All material business and product-related extra-financial risks to which the Vicat Group could be exposed throughout its value chain are already taken into consideration in the risk map compiled and updated on a regular basis by internal audit (see Chapter 5 of the Registration Document "Risk factors"). The Legal Department, the Finance Department and the CSR Coordination unit, take part in reviewing this risk map. Risk mapping results were shared with the operational units in the countries in which the Vicat Group operates. Please note that the Group's prioritization of extra-financial risks may be different from one country to another. The relevance of its risks was assessed by the Group's General Management which approved the risk map.

The policy of preventing these risks is an integral part of the Group's long-term industrial policy. The application of this policy by its operational units and at all levels of its organization means that the Group can support the transition to combating climate change. It can also help preserve natural resources as part of a circular economy approach and can guarantee the personal integrity and social and societal commitment of all its entities to inclusion. It can help to protect ecosystems and biodiversity through its operating, restoration and offsetting techniques and methods and by developing new products and can strengthen its links with local communities as a result of ethical and responsible production, improving the socio-economic vigor of the regions where it operates.

2.6. Report of the independent verifier, on the consolidated non-financial statement included in the Group management report

This is a free translation into English of the Statutory Auditor's report issued in French and is provided solely for the convenience of English speaking readers. This report should be read in conjunction with, and construed in accordance with, French law and professional standards applicable in France.

For the year ended 31 December 2018

To the Shareholders,

In our capacity as independent verifier of Vicat (hereinafter the "entity"), accredited by COFRAC under number n° 3-1080 ⁽¹⁾, we hereby report to you on the non-financial statement for the year ended 31 December 2018 (hereinafter the "Statement"), included in the management report pursuant to the legal and regulatory provisions of articles L. 225 102-1, R. 225-105 and R. 225-105-1 of the French Commercial Code (*Code de commerce*).

(1) whose scope is available at www.cofrac.fr

The entity's responsibility

Pursuant to legal and regulatory requirements, the Board of Directors is responsible for preparing the Statement, which must include a presentation of the business model, a description of the principal non financial risks, a presentation of the policies implemented in light of those risks and the outcome of said policies, including key performance indicators.

The Statement has been prepared in accordance with the entity's procedures (hereinafter the "Guidelines"), the main elements of which are presented in the Statement.

Independence and quality control

Our independence is defined by the provisions of article L. 822-11-3 of the French Commercial Code and the French Code of Ethics (Code de déontologie) of our profession. In addition, we have implemented a system of quality control including documented policies and procedures regarding compliance with the ethical requirements, French professional standards and applicable legal and regulatory requirements.

Responsibility of the independent verifier

On the basis of our work, our responsibility is to provide a reasoned opinion expressing a limited assurance conclusion on:

- the consistency of the Statement with the provisions of article R. 225-105 of the French Commercial Code;
- the fairness of the information provided in accordance with article R. 225 105 I, 3 and II of the French Commercial Code, i.e., the outcome of the policies, including key performance indicators, and the measures implemented in light of the principal risks (hereinafter the "Information").

However, it is not our responsibility to comment on:

- the entity's compliance with other applicable legal and regulatory provisions, in particular the French duty of care law and anti-corruption and tax evasion legislation;
- the consistency of products and services with the applicable regulations.

Nature and scope of our work

The work described below was performed in accordance with the provisions of articles A. 225-1 et seq. of the French Commercial Code determining the conditions in which the independent third party performs its engagement and with ISAE 3000 – Assurance engagements other than audits or reviews of historical financial information.

Our procedures allowed us to assess the consistency of the Statement with regulatory provisions and the fairness of the Information:

- we obtained an understanding of all the consolidated entities' activities, the description of the labour and environmental risks associated with their activities and, where applicable, the impact of those risks on compliance with human rights and anti corruption and tax evasion legislation, as well as the resulting policies and their outcomes;
- we assessed the appropriateness of the Guidelines with respect to their relevance, completeness, reliability, objectivity and understandability, with due consideration of industry best practices, where appropriate;
- we verified that the Statement includes each category of labour and environmental information set out in article L. 225 102 1 III, as well as information regarding compliance with human rights and anti corruption and tax evasion legislation;
- we verified that the Statement includes an explanation for the absence of the information required under article L. 225-102-1 III, 2;
- we verified that the Statement presents the business model and the principal risks associated with all the consolidated entities' activities, including where relevant and proportionate, the risks associated with their business relationships and products or services, as well as their policies, measures and the outcomes thereof, including key performance indicators;
- we verified, where relevant with respect to the principal risks or the policies presented, that the Statement provides the information required under article R. 225-105 II;
- we assessed the process used to identify and confirm the principal risks;
- we asked what internal control and risk management procedures the entity has put in place;
- we assessed the consistency of the outcomes and the key performance indicators used with respect to the principal risks and the policies presented;

- we verified that the Statement includes a clear and reasoned explanation for the absence of policies concerning one or more of the risks;
- we verified that the Statement covers the scope of consolidation, i.e., all the companies included in the scope of consolidation in accordance with article L. 233-16 within the limitations set out in the Statement;
- we assessed the data collection process implemented by the entity to ensure the completeness and fairness of the Information;
- for the key performance indicators and other quantitative results ⁽¹⁾ that we considered to be the most important, we implemented:
 - analytical procedures to verify the proper consolidation of the data collected and the consistency of any changes in those data,
 - tests of details, using sampling techniques, in order to verify the proper application of the definitions and procedures and reconcile the data with the supporting documents. This work was carried out on a selection of contributing entities ⁽²⁾ and covers between 52% and 64% of the consolidated data relating to the key performance indicators and outcomes selected for these tests;
- we referred to documentary sources and conducted interviews to corroborate the qualitative information (measures and outcomes) that we considered to be the most important ⁽³⁾;
- we assessed the overall consistency of the Statement based on our knowledge of all the consolidated entities.

We believe that the work carried out, based on our professional judgement, is sufficient to provide a basis for our limited assurance conclusion; a higher level of assurance would have required us to carry out more extensive procedures.

Means and resources

Our work was carried out by a team of 4 people between October 2018 and February 2019 and took a total of 5 weeks.

We were assisted in our work by our specialists in sustainable development and corporate social responsibility. We conducted interviews with the people responsible for preparing the Statement.

Conclusion

Based on our work, nothing has come to our attention that causes us to believe that the non-financial statement is not in accordance with the applicable regulatory provisions and that the Information, taken as a whole, is not presented fairly and in accordance with the Guidelines.

Neully-sur-Seine, 15 February 2019

Original French report signed by:

Independent third-party body

Grant Thornton

Membre français de Grant Thornton International

Michel Riguelle
Associé

Olivier Bochet
Associé

(1) HR & Safety quantitative information: breakdown of Group workforce by age, gender and geographical area; recruitments; departures; absenteeism; number of lost-time accidents among Group employees; number of lost days; frequency rate; severity rate; number of hours of training; disabled employees.

Environmental quantitative information: dust emissions from kilns assessed; SO₂ emissions; NO_x emissions; heat balance of cement factory kilns; total electricity consumption and split by business segment; total water requirement and split by business segment; effective water consumption; environmental discharges; consumption of raw materials for the production of clinker; gross CO₂ emissions of cement kilns; total direct and indirect CO₂ emissions.

(2) France and Switzerland

(3) Qualitative information: "Being a good economic citizen"; "Supporting education and expanding access to cultural and sporting activities"; "Contributing to the improvement of local sanitation facilities and quality of life for residents living near the Group's sites".

Cross-reference table of items in the Statement of Extra-Financial Performance report

Between Article L. 225-102 para. 1 and 2 and R. 225-105 of the French Commercial Code and the information contained in the Registration Document. The business model can be found at the start of Chapter 2 of this Document.

See point 2.5.1.2 of chapter 2 of this Document for the methodology for identifying significant extra-financial risks. Risk management is explained in chapter 5 of the Registration Document.

Social information

No	Information required by articles L.225-102-1 and R.225-105	Sections	Page(s)
1	Total workforce and breakdown by gender, age and geographical area	2.1.3.1	37
2	Recruitment and lay-offs	2.1.3.1	37
3	Remuneration and pattern of change	2.1.3.1	37
4	Organization of working hours	2.3.1.1	49
5	Absenteeism	2.3.1.1	49
6	Procedures for informing and consulting employees and negotiating with them	2.3.1.1	49
7	Review of collective agreements	2.3.1.1	49
8	Health and safety conditions at work	2.3.1.2	50
9	Agreements signed with unions or staff representatives concerning workplace health and safety	2.3.1.2	50
10	Frequency and severity of workplace accidents and occupational illnesses	2.3.1.2	50
11	Training policy	2.1.3.2	40
12	Total number of hours of training	2.1.3.2	40
13	Measures to promote gender equality	2.1.3.2	40
14	Measures to promote the employment and integration of the disabled	2.2.2.1	43
15	Policy on the elimination of discrimination	2.2.2.1	43
16	Freedom of association and the right to collective bargaining	2.3.1.1	49
17	Elimination of discrimination in respect of employment and occupation	2.2.2.1	43
18	Elimination of all forms of forced or compulsory labor	2.3.1.1	49
19	Effective abolition of child labor	2.3.1.1	49

Environmental information

No	Information required by article R. 225-105 of the French Commercial Code	Sections	Page(s)
20	Organization within the Group that takes into account and assesses environmental issues or that handles environmental certification	2.3.3.1	54
21	Training and information provided to employees with regard to the environment	2.3.3.1	54
22	Resources devoted to the prevention of environmental risks and pollution	2.3.3.1	54
23	The amount allocated to provisions and guarantees in respect of environmental risks	2.3.3.1	54
24	Prevention, reduction or clean-up measures: Air/Soil/Water	2.3.3.2	55
25	Measures to prevent, recycle and eliminate waste products	2.3.3.2	55
26	Consideration of noise pollution and all other forms of pollution specific to an activity	2.3.3.2	55
27	Water consumption and supply in accordance with local constraints	2.3.3.2	55
28	Consumption of raw materials and measures taken to improve the efficiency of their use	2.2.1.1	41
29	Energy consumption and measures taken to improve energy efficiency and use of renewable energy sources	2.3.3.2	55
30	Land use	2.3.3.2	55
31	Discharges of greenhouse gases	2.3.3.2	55
32	Adaptation to the consequences of climate change	2.1.2.1	35
33	Measures taken to preserve or increase biodiversity	2.3.2.2	53

Societal information

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GLOSSARY

Additive	All products incorporated into concrete that are not cements, aggregates, adjuvants, mixing water or additives (for example fibers, color pigments, etc.).
Adjuvant	Chemical product incorporated in low doses (less than 5% of the mass of cement) in concrete or mortar in order to modify some of its properties. It is incorporated either before or during blending, or during the mixing operation.
Agglomerate ore product	Fragment, usually of rock, used as an aggregate in concrete or mortar. The term aggregate is more appropriate. See "Aggregate".
Aggregate	Component of concrete. All mineral fragments known, depending on the grain size in the range 0 to 125 mm (the dimension is the length on the side of the square mesh of the sieve through which the grain can pass): fillers, fine sands, sands or fine gravels. A distinction is made between natural aggregates resulting from loose or solid rock when not subjected to any treatment other than mechanical, and artificial aggregates created by the thermal or mechanical transformation of rocks or ores. Natural aggregates can be rolled, have a round shape of alluvial origin or a crushed, angular shape produced from quarry rock. The type of the links between the aggregates and the cement paste strongly influences the strength of the concrete.
Alternative fuel	Combustible by-product or waste product used as a fuel to produce heat as a replacement for a "premium" fuel (fuel oil, coal, petroleum coke). Also known as a "secondary fuel".
Bagging machine	Automated bagging system. In a cement factory, its capacity can reach 5,000 bags/hour. The rotating unit has a number of nozzles (8 to 16) and is fed with empty bags by arms or by projection from one or two peripheral stations. The central silo feeds the nozzles mounted on the weighing scales. The bags are automatically removed during rotation and placed on a conveyor belt that feeds the palletization equipment.
Binder	Material able to pass – under certain conditions (in the presence of mixing water in the case of hydraulic binders) – from a plastic state to a solid state; it is thus used to combine inert materials. Component of concrete which, following the setting process ensures cohesion of the aggregates.
Calcination	Conversion of a limestone into lime by firing at high temperature.
CEM	This designation applies to cements complying with European standard EN 197-1. "CEM" cements consist of various materials and are of statistically homogeneous composition.
CEM I	This designation applies pursuant to standard EN 197-1 to cement of the "Portland Cement" type, i.e. a cement comprising at least 95% clinker. Certain CEM I cements are recognized as resistant to sulfates, under EC labeling, since standard NF EN 197-1: 2012 entered into force on 07/01/2013. There are three separate categories: <ul style="list-style-type: none"> ■ CEM I SR0: cement where the clinker's C3A content = 0% ■ CEM I SR3: cement where the clinker's C3A content ≤ 3% ■ CEM I SR5: cement of which the clinker's C3A content ≤ 5%
CEM II	This designation applies pursuant to standard NF EN 197-1 to cements, the most common types of which are "Portland composite cement" (the letter "M" is then added to the designation), "Portland limestone cement" (the letter "L" is then added to the designation), "Portland slag cement" (the letter "S" is then added to the designation) and "Portland silica fume cement" (the letter "D" is then added to the designation). A CEM II cement has a clinker content ranging: either from 80 to 94%; this cement is then designated "CEM II/A"; or from 65 to 79%; this cement is then designated "CEM II/B".
CEM III	This designation applies pursuant to standard NF EN 197-1 to "Blast furnace cement" comprising blast furnace clinker and slag in the following possible combinations: <ul style="list-style-type: none"> ■ 35% to 64% clinker and 36% to 65% slag: this cement is then designated "CEM III/A"; ■ 20% to 34% clinker and 66% to 80% slag: this cement is then designated "CEM III/B"; ■ 5% to 19% clinker and 81% to 95% slag: this cement is then designated "CEM III/C". CEM III/B and CEM III/C cements are recognized as resistant to sulfates, at the level of EC labeling, since standard NF EN 197-1: 2012 entered into force on 07/01/2013. They are labeled CEM III/B-SR or CEM III/C-SR.
CEM IV	Refers to "Pozzolana cement".
CEM V	Refers to "composite cement".

Cement	Hydraulic binder, <i>i.e.</i> a fine powder which, when mixed with water, forms a paste which sets and then hardens following reaction with the water. After hardening, this paste retains its strength and stability even under water.
Cement type	Means of classification standardized according to the nature of the cement components. There are five types. See “CEM I”, “CEM II”, “CEM III”, “CEM IV” and “CEM V”. This classification is associated with its regular strength class: 52.5; 42.5; 32.5, as well as its short-term strength class: R; N; L.
Clay	compact and impermeable sediment, becoming plastic, malleable, and more or less thixotropic in the presence of water. It has different physicochemical characteristics depending on its smoothness. Composed of silicoaluminates, clay is present in the raw materials for manufacturing cements and hydraulic lime. It is present to a greater or lesser extent in marls. See “Marl”.
clinker for natural quick-setting cement	The clinker for natural quick-setting cement results exclusively from the moderate-temperature firing (1,000°C to 1,200°C) of regular bedded argillaceous limestone, extracted from uniform rock strata.
clinkerization	Conversion of raw materials (limestone, silica, alumina and iron oxide) into clinker, occurring at a temperature of 1,450°C for a Portland clinker.
Concrete	Building material produced from a mixture of cement, aggregates and water, possibly supplemented by adjuvants, admixtures and additives. This mixture, made on the building site or in a factory, is in the plastic state. It is able to take the shape of the mold and then hardens gradually to eventually form a monolith. Depending on the formulation, use and surface treatment, it can vary considerably in performance and appearance.
Concrete batching plant	Stationary equipment for the industrial production of ready-mixed concrete.
Cooler	Unit located at exit from a clinker kiln intended to cool clinker at 1,400°C to an ambient temperature. Grid coolers and perforated plate coolers are the most common types; traditional coolers consist of a series of mobile rows of plates that push the clinker towards the discharge point (arranged in a bed of material from 60 to 90 cm in thickness). Air blown upwards through the plates provides cooling: at the output from the clinker bed, some of the hottest air (secondary air) goes back up into the kiln to feed combustion. Excess air is discharged at the back of the unit. In modern coolers, all the plates are fixed. They are protected from the hot clinker by a bed of cold clinker. The clinker is moved towards the discharge point by various “rake” or “walking floor” devices.
Crushed aggregate	Aggregate produced by crushing rocks.
Crusher	Crushing machine, used especially in a quarry. Crushers operate with jaws (with reciprocating motion, nut-cracker principle), with hammers for softer or more mobile materials or by grinding between inverted vertical cones (fine gravels).
Crushing	Breaking rocks into small pieces by grinding or pounding.
Decarbonation	Reaction releasing the CO ₂ contained in the limestone raw materials under the action of heat (850 to 950°C). The remaining lime (CaO) then combines with silicates and aluminates to form the clinker. This reaction absorbs a great deal of heat and constitutes the main heat consumption of the kiln.
Energy recovery	Introduction into the production process of by-products, waste or fuels otherwise of no use, in order to use the calorific content for the production of heat. These products replace, in whole or in part, primary fuels such as coal, fuel or gas. Their use makes it possible to save primary energy resources in energy and prevent them from being consumed and causing pollution when discharged into the natural environment. For example, in a cement works, tires or waste solvents are used as fuel for the kiln.
Fine gravel	Aggregate having a diameter between 1 and 63 mm.
Fly ash	By-product of the combustion of coal in power stations used as a source of silica and alumina in the manufacture of clinker, or to replace part of this in the manufacture of Portland composite cement.
Formulation	Operation consisting of defining the proportions – by weight rather than volume – of various components of a concrete, in order to meet the desired strength and appearance requirements.
Fresh concrete	Concrete as it exists in the phase after mixing and before setting, in other words, in a plastic state which allows its transportation and installation. The workability of a concrete is assessed during this phase of its manufacture, by subjecting a sample to a slump test on the Abrams cone.
Granulometry	a) Measurement of the granularity of an aggregate, <i>i.e.</i> of the range of particle sizes it contains, by passage through a series of square mesh sieves of standardized dimensions. b) Granulometry or granulometric analysis: the measurement of the proportion of the various granular sizes of the grains of a powder, sand or aggregate.
Greenfield	A greenfield plant construction project is a project where the Group undertakes the construction of a cement works on a site where there was no previous cement business. After checking the existence and accessibility of reserves of natural resources of sufficient quality and quantity for cement manufacture, the project generally involves designing and establishing the various components of the industrial and commercial process. A brownfield project, on the other hand, is one where there was already a cement business on the site.

Grinding	Reduction to powder or very fine particles. Grinding can be performed by pounding (minerals), by crushing (dyes, cement) or by crumbling (refuse). In a cement factory, the grinding plants generally comprise a grinding mill, a separator that returns oversize particles to the mill and a ventilation and dust extraction system.
Gypsum	Natural calcium sulfate or a by-product from industries manufacturing phosphoric acid or citric acid. It is added to cement as a setting regulator.
Handleability	Condition defining the ability of a mortar or a concrete to be transported, handled and used; it is characterized by the consistency and the plasticity of material.
Heat balance	Expression of the heat exchange between a closed environment and the outside. More specifically for cement kilns, the heat balance evaluates the heat inputs and compares these with the requirements of physicochemical processes and heat losses.
Homogenization	Operation carried out in cement works to obtain a homogeneous mixture of the components of the raw meal before firing. It can be carried out discontinuously by batch or in a continuous process. Mechanical and/or pneumatic mixing means may be used.
Hopper	Bulk materials (sand, aggregates, cement) storage unit in the shape of a truncated cone made from steel or concrete. At the bottom of a hopper is a system for discharging the material by gravity.
HPC	Abbreviation for “high-performance concrete”. The formulation of this concrete makes it particularly compact and therefore of low porosity. Its mechanical strength is in excess of 50 MPa and it has much higher durability than standard concretes.
Hydration (of cements)	Chemical phenomenon by which cement fixes mixing water and triggers the processes of setting and then hardening. This reaction is accompanied by a release of heat, the amount of which depends on the type of cement.
Lime	Binder obtained by the calcination of more or less siliceous limestone. A distinction is made between air limes, which harden under the action of carbon dioxide in the air, and hydraulic limes, which set by mixing with water.
Limestone	Sedimentary rock containing primarily calcium carbonate (CaCO ₃). Calcite is the most stable and most common crystalline form. Dolomites constitute a separate class: they are mixed carbonates (calcium and magnesium). Limestone is one of the basic components of clinker; it contributes the lime necessary for the formation of silicates and aluminates. The magnesia content of the limestone used must be no more than a few percent in order to prevent the formation of non-combined magnesia on firing and likely to cause expansion of the concrete in the medium or long term.
Marl	Natural mixture of clay and limestone in various proportions. If the amount of limestone is less than 10%, the marl is known as argillaceous. Marl with higher proportions is referred to as marly limestone. It is generally characterized by its carbonate content (lime and magnesia in a lesser proportion). It is one of the raw materials essential for the manufacture of cement; it provides the argillaceous fraction rich in iron and aluminosilicates.
Material recovery	Introduction into the production process of by-products or waste products in order to use their chemical properties. These products replace in whole or in part products extracted from quarries. Their use makes it possible to save natural mineral resources and prevent them from being consumed and causing pollution when discharged into the natural environment. For example, in a cement works, foundry sands are incorporated into the raw material to provide silica in place of natural sand and synthetic gypsums (inter alia from the desulfurization of fumes from heat generator unit) and are used to replace, completely or partially, natural gypsum or anhydrite in cement to control the setting time.
Meal feed	Name given to the cement kiln raw material after grinding (the size of the grains corresponds to that of flour).
Mixer truck	Vehicle used to transport fresh concrete from the production location to the construction site. Also known as a transit mixer truck or truck mixer.
Mortar	Mix of cement, sand and water, possibly supplemented by adjuvants and admixtures. It differs from concrete in that it does not contain fine gravels. Prepared on the building site – starting from pre-dosed dry industrial mortar or by proportioning and mixing all the components – or delivered to the site from a batching plant, mortars are used for joints, coatings, screeds and for various sealing, reshaping and filling purposes.
Natural quick-setting cement	Quick-setting cement comprised of the clinker for natural quick-setting cement only, grounded, and not requiring a setting regulator.
Plaster	Surface coating (approximately 2 cm for traditional coatings) comprising a cement mortar and/or hydraulic lime, intended to cover a wall, in order to homogenize its surface and waterproof it. A distinction is made between traditional plasters (which require three layers), double-layer plasters and single-layer plasters (based on industrial mortars and applied in two passes).
Portland cement	CEM I, CEM II, CEM III, CEM IV, CEM V-type cements, manufactured from Portland clinker and a setting regulator, and other components. Cement complying with standard NF EN 197-1.
Portland clinker	Basic component of a Portland cement, comprising four major mineral elements: limestone, silica, alumina and iron oxide. It is obtained by firing at a high temperature in a cement kiln (1,450°C).

Pozzolana	Product of volcanic origin composed of silica, alumina and iron oxide which, in the form of fine powder, is suitable for combining with lime to form stable compounds with hydraulic properties (hardening under water). By extension refers to natural or artificial materials having the same property. Pozzolanas are components of certain types of cement.
Precalcination	System enabling combustion to be started before entry into the kiln and thus reducing the quantity of energy required in the kiln.
Precalciner	Combustion chamber at the base of the preheater tower, fed with all fuel types and hot air for combustion (750 to 900°C) coming from the cooling of the clinker. The precalcinator can contribute up to 55% of the heat necessary for satisfactory operation of the kiln. See "Preheater".
Precast concrete products	Production of construction components away from their final site, in a factory or at a nearby location. Many concrete structural components can be prefabricated: posts, beams, load-bearing or insulation panels, façade panels, cladding, as well as standardized elements blocks, joists, shuttering slabs, honeycomb slabs, tiles, components of roadway or drainage systems, drainage systems or street furniture.
Preheater	Tower comprising a succession of cyclone stages. At each stage, the cooler meal from the stage above is heated on contact with the warmer gas coming from the stage below. The gas/meal mixture is then decanted into the cyclone. The heated meal then drops down to the stage below to be further heated. The cooled gases go up to the stage above to continue heating the meal. At the bottom of the preheater, the meal enters the rotary kiln. Preheaters can also include a precalcinator.
Prehomogenization	Process carried out in a cement factory to obtain a premix of crushed raw materials before grinding. It can be carried out discontinuously by batch (constitution of a heap during a few days while a second one is used) or continuously in circular workshops (simultaneous eccentric rotation and discharge on the heap and one in use).
Pumping	Process of conveying the concrete from a feed hopper to the pouring site via tubes. It can carry the concrete to horizontal distances of up to 400 m (or even 1.5 km) and vertical distances of 100 m (or even 300 m).
Quarry	Materials extraction site subject to the provisions governing "Installations Classées pour la Protection de l'environnement" (sites subject to environmental protection regulations). These sites are generally open-air, except for the Chartreuse underground quarries where stone fired to make quick-setting cement is extracted. Quarries produce the natural raw materials required to make cement or for the production of aggregates used in ready-mixed concrete or earthworks. Quarries are generally worked by blasting in the case of solid rock seams. Loose and alluvial materials, in or out of water, are extracted by machine. Quarries are operated under strict environmental controls in compliance with a prefectural order implementing an administrative instruction based on a large number of studies, including an impact assessment. As far as possible, reinstatement agreed with the local authority and local community is part of the operation and is carried out as the faces advance.
Raw material	Name given to the raw material processed in the cement kiln.
Raw mill	Grinding plant. In a cement works, this may be a ball mill, roller mill or vertical mill.
Ready-mixed concrete	Concrete made in a plant remote from the construction site or on the site, mixed in a stationary mixer, delivered by the manufacturer to the user in a fresh state and ready to use.
Roller aggregate	Aggregate of alluvial origin made up of round-shaped grains.
Sand	Aggregate of diameter < 6.3 mm.
Screed	Thin layer of cement mortar (3 to 5 cm) poured on to a concrete floor in order to render it flat.
Setting	Start of the development of the strength of the concrete, mortar or the cement paste. It is assessed by the setting test (NF P 15-431, NF EN 196-3).
Setting regulator	Cement component intended to slow down the hydration reactions. Gypsum and calcium sulfate are most commonly used.
Setting time	The setting time for cements is determined by observing the penetration of a needle into a cement paste of standardized consistency ("standard" paste) up to a specified depth (NF EN 196-3). The device, known as "Vicat apparatus", makes it possible to measure the interval between the start of water/cement contact and the start of setting (penetration of the Vicat needle up to 4 mm from the bottom), as well as the end of setting (virtually no penetration).
Silica fume	Silica fume is a by-product of the production of silicon and its alloys. It is obtained by condensation of SiO gas or by oxidation of Si metal on the surface of the electrometallurgy furnaces, the fumes of which are collected and filtered. This microsilica is generally condensed in order to facilitate storage and handling. Silica fume appears as spherical elementary amorphous silica balls (SiO ₂) of a diameter between 0.1 and 0.5 µm. Their silica content varies from 70 to 98% depending on the manufacturing plant and the alloy produced. In concretes, silica fume acts according to two mechanisms: <ul style="list-style-type: none"> ■ by a granular effect related to the shape and the extreme fineness of the powder; ■ by pozzolanic reaction due to the high amorphous silica content.

Glossary

Silo	High-capacity tank, generally cylindrical, intended for dry materials (sands, cements, etc.). Made of steel or concrete, loaded from above and unloaded from below, it is equipped with various types of extraction devices. See “Hopper”.
Slag	By-product of the manufacture of cast iron from metal industry blast furnaces. It has hydraulic characteristics similar to that of clinker, and is, therefore, used as a component of certain cements.
Standard	Document specifying a set of technical or other specifications, drafted in collaboration with the parties concerned (representatives of manufacturers, users, consumers, authorities, and specialist organizations such as the CSTB). Standards require ministerial decrees to make them mandatory. There are various types: test, performance, safety and terminology standards. An ISO standard is a standard drafted and/or adopted by the International Standardization Organization. An EN standard is a standard adopted by the European Committee for Standardization. A referenced standard NF EN ISO + No. reproduces in full the European standard, which in turn reproduces the international standard with the same number.
Strength of a concrete	All behavioral characteristics under compression, traction and bending stresses. In France, the strength of concrete structures is conventionally checked 28 days after their installation. In the United States, the period is 56 days.
Sulfoaluminous clinker	Basic component of a sulfoaluminous cement, comprised of raw materials that essentially contain the following oxides: CaO, Al ₂ O ₃ , SiO ₂ , Fe ₂ O ₃ , SO ₃ , and other minor elements. This clinker is obtained by firing at a temperature of around 1,300°C.
Therm (th)	Unit of heat energy. 1 therm = 1,000 kilocalories = 1,000,000 calories. This unit is replaced by the energy unit, the joule (J): 1 thermie = 4.1855 MJ (4,185,500 J). The specific consumption of the cement kiln is measured: in therms per tonne of clinker (old units); or in gigajoules per tonne of clinker (new units). Example: a kiln consumes 850 therms per tonne of clinker, which is the equivalent of 3,558 megajoules per tonne produced.
Truck mixer	See “Mixer truck”.
Ultra-High-Performance Fiber-Reinforced concrete (UHPC)	The addition of metallic fibers increases this concrete’s tensile capacity under bending and shear stress. Differing from high-performance concrete (HPC) through its ability to avoid the use of traditional steel reinforcement, compressive strength greater than 130 MPa, and direct tensile strength greater than 10 MPa.
X-ray diffraction (analysis)	This technique is used to determine the mineral composition of cement, clinker or raw meal. It allows for rapid and very precise controls at various stages of the cement manufacturing process. For this analysis, which takes only a few minutes, samples in the form of pressed powder pellets or diluted in a glass bead medium are exposed to an X-ray beam. The beam emitted by a powerful X-ray tube interacts with the sample, provoking the dispersion of the beam in a range of directions. The analysis of the resulting X-ray diffraction pattern – or “diffractogram” – allows for the determination of the minerals contained in the sample and their concentrations.
X-ray fluorescence (analysis)	This technique is used to determine the chemical composition of cement or raw meal. It allows for rapid and very precise controls at various stages of the cement manufacturing process. For this analysis, which takes only a few minutes, samples in the form of pressed powder pellets or diluted in a glass bead medium are exposed to an X-ray beam. The beam emitted by a powerful X-ray tube excites the elements contained in the sample. When using X-ray fluorescence, the excited atoms in turn emit X-rays along a spectrum of wavelengths characteristic of the types of atoms present in the sample. By measuring their intensity, the concentration of each chemical element can be obtained.



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