

## C0. Introduction

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### C0.1

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#### (C0.1) Give a general description and introduction to your organization.

##### Company Profile

LafargeHolcim is the global leader in building materials and solutions. It is active in four business segments: Cement, Aggregates, Ready-Mix Concrete, and Solutions and Products. It was founded in mid-2015 following the merger of Lafarge S.A and Holcim Ltd. The Group has a presence in 80 countries and has over 75 000 employees. In 2018 it recorded CHF 27.5 bn in net sales and has 312.9 mt of annual cement production capacity worldwide. The Group has over 2,300 plants (including over 1,400 in ready mix concrete, 663 in aggregates and 270 in cement and grinding plants).

The Group has solutions and services in cement, concrete, and aggregate for the following businesses: buildings, infrastructure, distribution, oil and gas, affordable housing, and construction systems.

Cement is manufactured through a large-scale, capital-and-energy-intensive process. At the core of the production process is a rotary kiln, in which limestone and clay are heated to approximately 1,450 degrees Celsius. The semi-finished product, clinker, is created by sintering. In the cement mill, gypsum is added to the clinker and the mixture is ground to a fine powder – traditional Portland cement. Other high-grade materials such as granulated blast furnace slag, fly ash, pozzolan, and limestone can be added in order to modify the properties of the cement for special uses or specific application.

Aggregates include crushed stone, gravel, and sand. They can also be recycled from concrete wastes. They are typically produced by blasting hard rock from quarries and then extracting it and crushing it. Aggregate production also involves the extraction of sand and gravel from both land and under water, which generally requires less crushing. Aggregates are used as raw materials for concrete, masonry, and asphalt and as base materials for roads, landfills, and buildings. As such, they are a key component of construction projects worldwide. There is a very broad range of customers for aggregates. Major customers include concrete and asphalt producers, manufacturers of prefabricated concrete products, and construction and public works contractors of all sizes.

Concrete is the world's second most consumed good by volume after water. One cubic meter consists of approximately 280 kilograms of cement, 175 liters of water, and two tonnes of aggregates. Ready-mix concrete is one of the largest markets for the cement and aggregates industries.

##### Sustainability Strategy

The global megatrends of population growth, urbanization and rising living standards offer significant business and growth opportunities in our industry. The global building materials market is worth CHF 2.5 trillion annually and is continually growing. At the same time, these trends are challenging our planet through increased carbon emissions, depletion of natural resources and an increase of waste. As countries develop, solutions for sustainable prosperity are needed.

Buildings and infrastructure have come into focus in this challenge. While on one side they form the very basis for societal development, they also account for 30 to 40 percent of worldwide CO2 emissions, with around 5 percent occurring during the construction phase. Also, they consume substantial amounts of raw materials and generate significant volumes of waste. Society thus urgently needs to find solutions for a more sustainable built environment.

At LafargeHolcim we are committed to contribute our share along the value chain. Our 2050 vision for the built environment rests on four strategic pillars: **Climate and Energy, Circular Economy, Environment (with a focus on Water) and Community.**

In the center of all our activities to address the four drivers is Innovation. We will continue to develop innovative products and solutions for a built environment that meet these criteria, satisfying a continuously growing market demand for sustainable solutions.

### C0.2

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**(C0.2) State the start and end date of the year for which you are reporting data.**

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Row 1	January 1 2018	December 31 2018	Yes	1 year

**C0.3**

**(C0.3) Select the countries/regions for which you will be supplying data.**

Algeria  
Argentina  
Australia  
Austria  
Azerbaijan  
Bangladesh  
Belgium  
Brazil  
Bulgaria  
Canada  
China  
Colombia  
Costa Rica  
Croatia  
Czechia  
Ecuador  
Egypt  
El Salvador  
France  
Germany  
Greece  
Hungary  
India  
Indonesia  
Iraq  
Italy  
Jordan  
Kenya  
Lebanon  
Madagascar  
Malawi  
Malaysia  
Mexico  
New Zealand  
Nicaragua  
Nigeria  
Philippines  
Poland  
Réunion  
Romania  
Russian Federation  
Serbia  
South Africa  
Spain  
Switzerland  
Uganda  
United Kingdom of Great Britain and Northern Ireland  
United Republic of Tanzania  
United States of America  
Zambia  
Zimbabwe

**C0.4**

**(C0.4) Select the currency used for all financial information disclosed throughout your response.**

CHF

**C0.5**

**(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your consolidation approach to your Scope 1 and Scope 2 greenhouse gas inventory.**

Financial control

**(C-CE0.7) Which part of the concrete value chain does your organization operate in?**

- Limestone quarrying
- Clinker production
- Portland cement manufacturing
- Blended cement
- Belite cements
- Alternative 'low CO2' cementitious materials production
- Aggregates production
- Concrete production
- Concrete pavement / asphalt / tarmac

**C1. Governance**

**C1.1**

**(C1.1) Is there board-level oversight of climate-related issues within your organization?**

Yes

**C1.1a**

**(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.**

Position of individual(s)	Please explain
Board-level committee	The LafargeHolcim Board of Directors consists of 11 members, all of whom are independent, were not previously members of the LafargeHolcim management, and have no important business connections with LafargeHolcim. LafargeHolcim keeps the functions of Chairman of the Board of Directors and Group CEO separate. The Board of Directors has a dedicated Committee with a specific remit on Sustainability and Health and Safety (HSSC). The committee consists of five Board members and meets at least quarterly. This committee's mission is to provide advice on strategic direction and on the development and promotion of climate related topics. The HSSC's key climate related responsibilities: - informs, reviews and approves the LafargeHolcim's climate strategy framework - is briefed on a quarterly basis on key climate related aspects as well as on performance against key indicators - approves major climate-related capital expenditures, acquisitions and /or divestitures
Other C-Suite Officer	The LafargeHolcim Executive Committee consists of 9 members. LafargeHolcim aims to achieve a balanced relationship between management and control by keeping the functions of Chairman of the Board of Directors and CEO separate. The LH Executive Committee is ultimately responsible for the LafargeHolcim Climate and Energy strategy execution. On a quarterly basis, the Executive Committee is briefed on the on key climate related aspects as well as on performance against key climate performance indicators. The Group Executive Committee's key climate related responsibilities: - informs and reviews the LafargeHolcim's climate strategy framework and ambition review process - is briefed on a quarterly basis on key climate related aspects as well as on performance against key indicators - approves climate-related capital expenditures, acquisitions and /or divestitures

**C1.1b**

**(C1.1b) Provide further details on the board's oversight of climate-related issues.**

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – all meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets Reviewing and guiding business plans Setting performance objectives Monitoring implementation and performance of objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues	The Board of Directors has a dedicated Committee with a specific remit on Sustainability and Health and Safety (HSSC). The committee consists of five Board members and meets at least quarterly. This committee's mission is to provide advice on strategic direction and the development and promotion of safety and sustainability, explicitly including Climate and Energy related topics. The entire Board of Directors is included in the Business Risk Management (BRM) process and are thus regularly updated on climate related risks and opportunities, as well as potential scenarios in carbon price regulation systems such as EU-ETS. The LafargeHolcim process for approval of major climate-related capital expenditures, acquisitions and /or divestitures, includes climate and other environmental and societal considerations in the assessment and ultimately requires the approval of the Board. In 2018, the Health, Safety and Sustainability Committee (HSSC) members have: - informed, reviewed and approved the LafargeHolcim's climate strategy framework and ambition review process - being briefed on a quarterly basis on key climate related aspects as well as on performance against key indicators - approved major climate-related capital expenditures, acquisitions and /or divestitures, includes climate and other environmental and societal considerations

**C1.2**

**(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.**

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Other C-Suite Officer, please specify (Health and Safety and Sustainability Board Committee)	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly
Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly
Chief Sustainability Officer (CSO)	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly
Chief Risks Officer (CRO)	Both assessing and managing climate-related risks and opportunities	Quarterly
Public affairs manager	Both assessing and managing climate-related risks and opportunities	Not reported to the board

**C1.2a**

**(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).**

**1 - Health and Safety and Sustainability Board Committee (HSSC):**

i, ii) LafargeHolcim Board of Directors is the highest management-level Committee with responsibility for climate-related issues and therefore, has a dedicated Committee with a specific remit on Sustainability and Health and Safety (HSSC).

iii) Its mission is to provide advice on strategic direction and the development and promotion of safety and sustainability topics, including climate and energy. The committee consists of four Board members and meets at least quarterly. In 2018, the Health, Safety and Sustainability Committee (HSSC) has been working closely with the sustainability team reviewing LafargeHolcim climate strategy framework and receiving regular updates on key climate related aspects as well as on performance against key indicators. In The HSSC's key climate related responsibilities:

- informs, reviews and approves the LafargeHolcim's climate strategy framework and ambition review process
- is briefed on a quarterly basis on key climate related aspects as well as on performance against key indicators
- approves major climate-related capital expenditures, acquisitions and /or divestitures, includes climate and other environmental and societal considerations

## **2 - Chief Executive Officer (CEO):**

i) The Group CEO reports to the LafargeHolcim Board of Directors

ii) Group CEO is the ultimate responsible for operational management of the company, including corporate climate strategy proposals and executing respective Boards resolutions.

iii) The Group CEO oversees the operational performance of the company against climate and energy targets. The Group CEO's key climate related responsibilities:

- informs and reviews the LafargeHolcim's climate strategy framework and ambition review process
- is briefed on a quarterly basis on key climate related aspects as well as on performance against key indicators
- approves climate-related capital expenditures, acquisitions and /or divestitures, includes climate and other environmental and societal considerations

## **3 - Chief Sustainability Officer (CSO):**

i) LafargeHolcim Group's CSO is a member of the leadership team and reports directly to the Group CEO.

ii) The CSO heads the Group Sustainability team, a cross-discipline department which is responsible to oversight the deployment of the LafargeHolcim Sustainability Ambition including its four pillars, Climate and Energy, Circular Economy, Water and Communities.

iii) The CSO is responsible for continuous reviews and guides climate-related items that could influence business strategy. In addition, the CSO ensures closely monitors any developments concerning climate-related issues by engaging with ESG, NGOs, policy makers and in trade associations.

Group CSO's key climate related responsibilities:

- develops the LafargeHolcim's climate strategy framework and ambition review process
- briefs on a quarterly basis the LafargeHolcim Board of Directors and Executive Committee on key climate related aspects as well as on performance against key indicators
- reviews the climate-related capital impact of expenditures, acquisitions and /or divestitures
- represents LafargeHolcim Group in a variety of climate related sectoral associations and fora, such as the Global Cement Association and World Business Council of Sustainable Development

## **4 - Chief Risk Officer (CRO):**

i) LafargeHolcim Group's CRO is a member of the leadership team and reports directly to the Group CFO.

ii) The chief risk officer oversees the Group LafargeHolcim Business Risk Management process, consolidates business risk profiles and reports and highlights any relevant climate risks to the Executive Committee and the Audit Committee of the Board.

iii) Group CRO's key climate related responsibilities:

- develops and manages the LafargeHolcim's Business Risk Management process, ensuring the inclusion of climate and energy related aspects
- ensures execution of the LafargeHolcim Business Risk Management process throughout the Group
- briefs on a quarterly basis the LafargeHolcim Board of Directors and Executive Committee on key climate related risks and opportunities

## **5 - Public Affairs Head:**

i) The Vice President for Public Affairs reports directly to the Head of Corporate Communications

ii) The Vice President for Public Affairs is responsible for the coordination of advocacy actions within LafargeHolcim and holds direct and specific responsibility for climate change related issues. As such, he ensures that the Group's long-term interests – in line with broader societal interests – are taken into account by public authorities.

iii) The Vice President for Public Affairs represents LafargeHolcim Group in a variety of climate related sectoral associations and fora, such as Cembureau and Global Cement Association

The Vice President for Public Affairs monitors the evolving legislative environment on carbon pricing mechanisms in the countries where we operate.

**(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?**

Yes

**C1.3a**

**(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).**

**Who is entitled to benefit from these incentives?**

Corporate executive team

**Types of incentives**

Monetary reward

**Activity incentivized**

Energy reduction project

**Comment**

The LafargeHolcim Group CEO and Executive Committee compensation is designed to reinforce the LafargeHolcim strategy. Its structure balances short-term and long-term performance, combines absolute and relative performance, and financial and non-financial metrics in measuring performance, and delivers compensation through a mix of cash and company shares. The compensation for members of the Executive Committee includes the following elements: - Fixed base salary - Pensions and benefits - Variable compensation: annual and long-term incentives Operational performance and energy efficiency are part of the criteria for their variable compensation. Climate reduction levers such as clinker factor and thermal energy substitution are included in this criteria. In addition, the performance share plan is designed to provide further forward-looking incentives for sustained Group performance, including the appropriate management of risks associated with climate change. Please note that this is not only the case for the CEO but also for some other Executive Committee members ( See annual report pages 86 - 92). For instance, in Europe the existing carbon cap and trade mechanism is impacting the region performance with all climate related optimization activities being key to maintain ebita and revenue growth - both directly linked to compensation.

**Who is entitled to benefit from these incentives?**

Business unit manager

**Types of incentives**

Monetary reward

**Activity incentivized**

Emissions reduction project

**Comment**

Cement plant managers receive a variable compensation which is linked to a yearly climate-related sustainability assessment done jointly between Cement Excellence Manufacturing and Sustainable Development. Two criteria and reference values are relevant for this question: 1.) Specific Thermal and Electrical Energy consumption 2) Specific net CO2 emissions (kg CO2/t of cementitious) They could be categorized under "emissions reductions", "energy reduction" and "efficiency".

**C2. Risks and opportunities**

**C2.1**

**(C2.1) Describe what your organization considers to be short-, medium- and long-term horizons.**

	From (years)	To (years)	Comment
Short-term	0	3	Our horizon for risk management cycle is a 3 year time frame in alignment with the strategy 2022 as we define the risk as an uncertainty on the achievement of company objectives
Medium-term	3	10	We extend the framework to 10 years in order to capture potential disruptions regarding sustainability as our targets aims at achieve decrease in greenhouse emissions by 2030
Long-term	10	40	In alignment with the International Energy Agency Low-carbon Technology Road Transition for the Cement Industry, our vision expands until 2050 to explore all opportunities of the scale-up phase of innovative technologies

**C2.2**

**(C2.2) Select the option that best describes how your organization's processes for identifying, assessing, and managing climate-related issues are integrated into your overall risk management.**

Integrated into multi-disciplinary company-wide risk identification, assessment, and management processes

**C2.2a**

(C2.2a) Select the options that best describe your organization's frequency and time horizon for identifying and assessing climate-related risks.

	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Six-monthly or more frequently	>6 years	The LafargeHolcim's Business Risk Management (BRM) aims to systematically recognize major risks as well as opportunities. In focus are a wide range of different internal and external risk types, among which environmental, energy and climate change related matters. The Group's risk profile is assessed both top down and bottom up. At least on a quarterly basis, climate related risks and opportunities are discussed with the Group Board of Directors Health and Safety and Sustainability Committee (HSSC). Note: For further information see references on frequency on engagement in chapter C1. Governance

C2.2b

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## (C2.2b) Provide further details on your organization's process(es) for identifying and assessing climate-related risks.

The LafargeHolcim risk management process is structured around several coordinated approaches conducted within the Group and it is subject to continuous improvement.

It includes a bottom-up and top-down risk assessments which cover environmental, sustainability, **climate change**, market, industrial, operational, financial, legal, compliance and reputational risks, whether under our control or not. These assessments are used as a basis for the Group risk map, which is updated every year and submitted and analysed by the Group's Executive Committee and the Audit Committee.

The bottom-up assessment includes several stages: i) Risk identification and analysis, ii) Risk mitigation, iii) Monitoring and reporting. The top-down assessment is performed through interviews with Heads of functions, Board of Directors and Executive Committee members and External Auditors.

At Group level, the top-down identification includes specific climate related focus areas:

- Reputation: reputational risks related to external references or stigmatization of the sector and engagement with the relevant stakeholders is being managed between the Group Sustainability Stakeholder and Group Media
- Environmental policies and Regulations: Relevant risks related to policies and regulations such as evolution of carbon pricing schemes are analysed and monitored by the Group Sustainable Development teams and Public Affairs Team
- Technology: The LafargeHolcim Cement Manufacturing Excellence Team oversees the cement technology related risks and opportunities, such as carbon capture technologies.
- Product, services and market related: The impact of climate change risks and opportunities on LafargeHolcim's business is assessed by all stakeholders affected somehow by such risks or opportunities.

At country level management assesses and evaluates the potential impact and likelihood of climate related risks that could have a material adverse effect on the current or future operation of the business. The risk horizon includes long-term strategic risks and short- to medium-term business risks, typically within a 3 year period of time. The impact of climate risks are assessed in all three cases.

The impact and likelihood are assessed for the current level (considering the mitigating activities and controls already in place, i.e. net risk) and for the target level (i.e., after implementation of actions plan aiming at reducing the risk to an acceptable level).

### Definition of likelihood

We define the likelihood as the probability of occurrence in the next 3 years.

- Virtually certain > 90%
- Very likely between 75% and 90%
- Likely between 60% and 75%
- More likely than not between 45% and 60%
- About as likely as not between 30% and 45%
- Unlikely between 15% and 30%
- Very unlikely between 5% and 15%
- Exceptionally unlikely <5%

### Definition of significance

We define significance (substantive financial impact) based on two criteria:

- the overall financial impact of the respective risk against the yearly average of the next 3 years of Group's operating EBITDA.

- Impacts below 5% of Group's operating EBITDA are considered as LOW
- Impacts between 5-8% of Group's operating EBITDA are considered as Medium-low
- Impacts between 8-12% of Group's operating EBITDA are considered as Medium
- Impacts between 12-15% of Group's operating EBITDA are considered as Medium-high
- Impacts above 15% of Group's operating EBITDA are considered as HIGH

- the overall impact on the Group's reputation, including impairment of reputation with investors, rating agencies, regulators and external stakeholders such as NGO or medias.

## C2.2c

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**(C2.2c) Which of the following risk types are considered in your organization's climate-related risk assessments?**

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	LafargeHolcim operates in countries where carbon pricing mechanisms are already in place, in the form of both cap and trade systems and carbon taxes. An example of the risk type - The risk of carbon prices to increase in the short term under the current regulation is therefore considered in our risk management process and used to inform our short term strategy and yearly financial planning on a regular basis. In 2018 in Europe under the current phase 3 of the EU-ETS, the CO2 price evolution from 7 to 23 €/ ton CO2 has been closely monitored and respective financial impacts assessed on a monthly basis. How it is included in climate-related risk assessments - Group level, the Public Affairs Department engages with policy representatives and monitors the evolving legislative environment on carbon pricing mechanisms. The Group Finance and Sustainability teams support the process with the development of different scenarios analysis to quantify the potential impacts. This work is used to inform regional and country existing business plans and short term strategies when significant risks are identified. At country level, Country Public Affairs Managers engage with local and regional policy representatives and associations. This informs representative groups of CEOs and functional managers, who regularly meet and monitor latest regulatory developments and activities influencing policy, that could have a material adverse effect on the current or future operation of the business. Updates on current carbon pricing regulations are regularly presented to our main governing bodies, mainly the Country and Group Executive Committees.
Emerging regulation	Relevant, always included	LafargeHolcim operates in countries where existing carbon pricing mechanisms are evolving, or new ones are being considered / being implemented. The introduction of new or change of existing carbon pricing regulations could have a significant impact on our operations as a large carbon emitter. An example of the risk type - The risk of carbon prices to be included in the short and mid term is therefore considered in our risk management process and used to inform our short and mid term strategy and yearly financial planning on a regular basis. A tangible example is the European Decarbonization Roadmap, an action plan aimed to manage the potential impact of the upcoming phase 4 under the EU-ETS, after having assessed a range of plausible scenarios of regulation developments. How it is included in climate-related risk assessments - At Group level, the Public Affairs Department monitors the evolving legislative environment on carbon pricing mechanisms in the countries where we operate. This is done in collaboration with Country Public Affairs Managers, who in their respective countries, monitor regulatory developments and activities influencing policy, that could have a material adverse effect on the future operation of the business. Local and Group Finance and Sustainability teams support the process with the development of different scenarios analysis to quantify the potential impacts. This work is used to inform regional and country business plans as well as our short and mid term strategies when significant risks are identified. Updates on emerging carbon pricing regulations are regularly presented to our main governing bodies, mainly the Country and Group Executive Committees.
Technology	Relevant, always included	Innovation is a key pillar in our climate strategy. Risks and opportunities associated with technological innovations or improvements that help us to reduce our CO2 emissions and energy consumption are an integral part of our risk management process. An example of the risk type - An example of the risks being considered is the risk of the cost of carbon capture technology being significantly higher than existing carbon pricing mechanisms in place and the lack of integrated deployment of Carbon Capture and required supply chain ecosystems (transportation, sequestration, etc.), preventing a successful and economically viable implementation of carbon capture technologies. How it is included in climate-related risk assessments - Their identification and assessment is centrally coordinated by our Group Cement Manufacturing Excellence team based in Holderbank and our R&D Center in Lyon, supported by regional and country teams. Technology related risks and opportunities have already been identified and respective mitigation measures and action plans have been considered in our Group-wide and Regional initiatives. These initiatives focus among others, on increasing the use of alternative fuels, the production of low carbon binders and the innovation of CO2 neutral technologies such as carbon capture and storage. With regards to increasing the use of alternative fuels and the production of low carbon binders, the availability of both alternative risks has to be managed at regional and business unit level, with the support of both, our Group Cement Manufacturing Excellence team based in Holderbank, our R&D Center in Lyon and our Group Strategy department. Risks related to carbon capture and storage technologies, are directly assessed and managed by our Group Cement Manufacturing Excellence team based in Holderbank and our R&D Center in Lyon. As result of this work, in 2018 LafargeHolcim has launched a Group-wide initiative to future-proof its sites summarized under the flagship ambition, "The Plants of Tomorrow", which aims is to create vertically integrated, intelligent and interconnected digital plants that harness disruptive technologies.
Legal	Relevant, always included	Climate change related litigation risk is an emerging phenomenon, with cases being brought before the courts in a limited number of jurisdictions in which we operate. An example of the risk type - As a large carbon emitter, the risk of Lafarge holcim being increasingly targeted, and potentially causing reputational damage and increased public scrutiny on this regard. This calls for management attention to mitigate possible risks. An example is the case in the Philippines where in 2017, the Human Rights Commission investigated whether the collective contribution to global warming by 47 coal, cement, oil and gas companies has violated Filipinos' basic rights to life, water, food, sanitation, adequate housing and self determination. LafargeHolcim subsidiaries were subject to investigation. How it is included in climate-related risk assessments - LafargeHolcim maintains a comprehensive risk-based compliance program with dedicated resources at local, regional and Group level with central steering under the Group Legal and Compliance Team. Group Legal manages all competition investigations, information requests and enforcement cases through a central team of legal specialists. Group Legal also tracks all Group-relevant litigation cases, and provides support to the relevant operating companies in defense and dispute resolution.
Market	Relevant, always included	Evolution of market demands are considered in our risk process. As the carbon debate intensifies, our main products, cement and concrete could be challenged as the building material of first choice because of perceived high embodied CO2. An example of the risk type - An example being considered is the risk of changing building materials preferences by our customers. In France for instance, timber is increasingly being favored against concrete in public tenders. How it is included in climate-related risk assessments - At Group level, our R&D center is responsible for development of new low carbon solutions, in response to Global and country specific market developments. At country level, Country Sustainability and Public Affairs Managers liaise regularly with respective Sales' team to monitor trends in demands of this products. LafargeHolcim has an important range of products and brands which can be considered as low carbon products: Ductal®, Agilia®, Thermania 6B®, Aether®, and other solutions to provide the best solutions to its customers, and developing new products with higher CO2 savings potential. In addition, our Group Sustainability Team engages regularly with relevant stakeholders to ensure sufficient transparency is provided on the environmental, social and economic responsibility of concrete, cement and aggregate companies' operations and their supply chains. LafargeHolcim is a founder member of the Concrete Sustainability Council (CSC) designed to provide the required transparency through a certification system. The CSC certification system consists of an operational manual and assessment criteria with guidance on their application. A typical certification process is applicable to all sizes of concrete companies, and currently comprises of three levels: bronze, silver and gold. Aggregate and cement suppliers can achieve a CSC supplier certificate to support their concrete clients with their CSC assessments.
Reputation	Relevant, always included	An example of the risk type - The risk of being perceived as a large carbon emitter could reduce our attractiveness to stakeholders such as customers, investors, and potential employees. Additionally, not meeting our CO2 reduction targets can have a negative impact on reputation, as stakeholder engagement and communication programs have been put in place. A recent example can be found in the Guardian publication where the concrete industry without clear distinction between respective players was subject to a series of articles pointing to concrete's responsibility in climate change. Such campaigns could lead to a negative perception of our products by our final customers, thus influencing building material preferences. Link: <a href="https://www.theguardian.com/cities/series/guardian-concrete-week">https://www.theguardian.com/cities/series/guardian-concrete-week</a> How it is included in climate-related risk assessments - Our Group Sustainability, Investors Relations and Corporate Communications teams run a regular process of monitoring and engaging with relevant stakeholders to assess and mitigate reputational risks.
Acute physical	Relevant, always included	An example of the risk type - The risk of LafargeHolcim's operations to be affected by extreme weather conditions such as flooding or water shortages. Acute physical risks are, included in our risk process. Countries assess and evaluate the impact and likelihood of potential supply chain interruptions plans in the event of natural disasters and build contingency plans. The mentioned risks can have an effect on logistics costs and/or sales volumes in the affected area. Examples are flooding on the Mississippi in 2019 or low water on the Rhine in 2018. How it is included in climate-related risk assessments - The financial impact is estimated based on the production volumes and revenues potentially affected. These risks are often part of insurance solutions. Additionally, our geographic and business diversification serves as a natural hedge.
Chronic physical	Relevant, sometimes included	Our broad geographical presence makes it more likely that at the one or other of our operations we could be affected by chronic physical risks such as rising sea levels or water scarcity due to global warming. Chronic physical risks are therefore, included in our risk process. An example of the risk type - A tangible example is the risk of business interruption with regards to water scarcity, since about 17% of our cement plants are located in water scarce areas. How it is included in climate-related risk assessments - As part of the LafargeHolcim policy framework, a mandatory Water Directive was approved and published in 2016. This directive sets the rules for managing water in a responsible manner. It includes compliance with all legal regulations, establishing operational water footprint, risk assessment and stakeholder engagement. While risks related to water scarcity are well addressed in our risk management approach, other emerging chronic physical risks are monitored to evaluate their explicit inclusion.
Upstream	Relevant, always included	An example of the risk type - The risk of the LafargeHolcim upstream supply chain being affected by climate related effects, leading to for example the cost increase of fossil fuels or raw materials, is included in our risk process through a number of criteria. An example of how this risk can materialize is the recent cost increase of slags and fly ashes in Europe. How it is included in climate-related risk assessments - At LafargeHolcim, the Group Procurement assesses and manages risks related to purchasing strategies of raw materials, including the supply of mineral components and energy. Additionally, the LafargeHolcim division of Geocycle - the leading provider of industrial, agricultural and municipal waste management services worldwide - ensures the mitigation of these risks by promoting and expanding the proven technology of 'co-processing' in existing facilities, to recover energy and recycle materials from waste, preventing LafargeHolcim from being dependent on traditional fuels. In 2018, we have achieved to replace more than 90% of coal fuel by using waste materials like used tires.
Downstream	Relevant, sometimes included	An example of the risk type - Since road transport remains Lafarge holcim principal logistics method, the risk of our logistics cost being increased as a result of carbon from transportation activities being more aggressively priced or taxed is included in our risk process in a number of countries where it is relevant. How it is included in climate-related risk assessments - The LafargeHolcim Group Logistics team assess and manages this risk implementing mitigation methods to optimize road transport operations. With our in-vehicle monitoring systems (IVMSs), we monitor critical aspects of driver behavior such as speeding, harsh acceleration and braking, and excessive cornering. In Europe, the IVMS is complemented with a load optimization initiative that aims to minimize and, when possible, avoid empty trips. These measures not only have a significant impact on reducing fuel consumption, but also improve our road safety performance and customer service.

## **(C2.2d) Describe your process(es) for managing climate-related risks and opportunities.**

The LafargeHolcim risk management process is structured around several coordinated approaches conducted within the Group and it is subjected to continuous improvement.

It includes a bottom-up and top-down risk assessments. These assessments are used as a basis for the Group risk matrix, which is updated every year and submitted to and analyzed by the Group's Executive Committee and the Audit Committee.

Through this process we identify, assess, mitigate and monitor the Group's overall risk exposure. Our goal is to incorporate risk thinking into all strategic decision-making, reducing the likelihood and impact of potential adverse events, ensuring compliance with laws & regulations and ensuring the deployment of our Internal Control system in every country where we operate. The bottom-up assessment includes several stages: i) Risk identification and analysis, ii) Risk mitigation, iii) Monitoring and reporting and iv) Verification & Remediation:

### **Risk mitigation:**

Respective actions and/or controls are defined by the management to mitigate the key risks identified. Risk transfer through insurance solutions and the Internal Control system form an integral part of risk management to mitigate the identified risks.

On a quarterly basis, climate related risks and opportunities are discussed with the Board of Directors Health and Safety and Sustainability Committee. In case significant risks and/or opportunities related to climate change are identified, specific actions to mitigate excessive risks or capture identified opportunities are proposed to the HSSC and Executive Committee.

### **Monitor & Reporting:**

Regular progress on the actions/controls are followed up by risk leads and reported to Group through the LafargeHolcim Risk Management tool. In terms of frequency, at least twice a year, progress on mitigating actions, controls and overall risk exposure is reported to the Audit Committee and other executive committees.

Additional reports of the effectiveness of the mandatory controls standards are submitted to the Group on a regular basis.

### **Verification & Remediation:**

Group Internal Audit performs independent assessments of the effectiveness of mitigating actions and controls and on the effectiveness of Internal Control and on the risk assessment process.

The annual audit plan drawn up by Group Internal Audit and approved by the Audit Committee takes into account the various analyses described above. Implementation of this plan and the summary of work presented to the Group Executive Committee and Audit Committee lead to more in-depth analyses in certain areas and contribute to the continuous risk identification process.

### **Case study for transition risk/opportunity:**

An example of this process is the specific short term response plan established to support the transition to the phase 4 of the new European Trading System which will come into force in 2021. Mitigation / Remediation: In view of the likely effect of the more strict CO2 free credit allocation systems and the likely increase of fossil fuels' costs and scarcity of alternative mineral components as well as our already low intensity levels throughout the region, a specific European decarbonization project climate change was developed distributed in three focus areas: i) CO2 & Energy Performance e.g. increase biomass usage & reduce clinker factor; ii) Further integrate CO2 in management e.g. include cost in production to incentivize change management and include CO2 impact in all M&A and CAPEX decisions; iii) Scenario Planning to evaluate profitability of exports, manage +/- 15% thresholds as well as 50%, 25%, 10% limits in Phase III. This program is being executed by respective countries, supported by Group functions and closely monitored by the Executive Committee.

### **Case study for physical risk/opportunity:**

LafargeHolcim has experienced business interruptions in recent years due to acute physical risks being materializing Examples of events include effects on river based supply chains as very low (Rhine in 2018) or very high (Mississippi 2019) water levels have an impact on shipping. Mitigation / Remediation: These events are being dealt with by our logistics departments as they implement well prepared response plans which involve a change in product sourcing from our network of plants and an adaptation of the modes of transport used.

## **C2.3**

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### **(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?**

Yes

## **C2.3a**

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**(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.**

**Identifier**

Risk 1

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type**

Transition risk

**Primary climate-related risk driver**

Policy and legal: Increased pricing of GHG emissions

**Type of financial impact**

Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

**Company- specific description**

Cement production is a process which emits a significant amount of CO2 from the raw materials and fuels (direct) as well as the electricity (indirect). Consequently existing and emerging pricing of CO2 emissions or CO2 taxes are a key component of our risk management process and are used to inform our strategy and financial planning on a regular basis. Today direct CO2 emissions from our cement operations are priced only in the EU and Canada, while we see the indirect impact (translating into higher energy costs) in a larger number of jurisdictions. As the direct emissions make up a far larger share of our total emissions we currently see the most substantial and predictable financial impact on our operations in the EU (35 integrated cement plants). Directives guiding the Phase 4 of the EU ETS implementation are in the process of being published. Our current assessment of the situation sees two main drivers of risk a) Price of EUAs on the market as LH transitions from being long to being short on EUAs b) Imports of clinker and cement from outside the EU and thus not subject to the EU-ETS becoming more cost competitive at the EU borders Through the modeling of various scenarios, we have estimated the financial impact of the upcoming phase 4 of the EU ETS considering a number of variables like: future market price for EUAs, cement demand forecasts, cement price development, new criteria for the calculation of free EUAs (i.e: benchmark).

**Time horizon**

Medium-term

**Likelihood**

More likely than not

**Magnitude of impact**

Low

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

<Not Applicable>

**Potential financial impact figure – minimum (currency)**

50000000

**Potential financial impact figure – maximum (currency)**

150000000

**Explanation of financial impact figure**

To estimate the potential of future CO2 costs we have estimated the required yearly EUA purchase based on EU production levels and free allowance allocation. An assumption of a CO2 price between 30 CHF / EUA (low) and 50 CHF/ EUA (high) has been considered to determine the range of the impact. No mitigating actions have been included. The estimated range shows the potential impact of CO2 costs. It does not include the required investment and additional operating costs as this is competitively sensitive information. As described in question C2.2b, the magnitude of this scenario is considered low since it is < 5% of Group operating EBITDA.

**Management method**

An example of company-specific activities to manage the risk: To support the transition to the phase 4 of the new European Trading System which will come into force in 2021, bringing more strict CO2 free credit allocation systems and the likely increase of fossil fuels' costs and scarcity of alternative mineral components, LafargeHolcim has implemented a regional-wide decarbonization roadmap. The initiative has been distributed in four key areas: i) Energy efficiency improvements and acceleration of Alternative Fuel usage; ii) Enhanced product portfolio optimization to accelerate the production of low carbon binders; iii) Network optimization to evaluate production thresholds and network optimization synergies and iv) Innovation of CO2 neutral technologies such as carbon capture and storage. This program is being executed by respective countries, supported by Group functions and closely monitored by the Executive Committee. As an example in our Austrian Plant Retznei we have achieved > 90% of fuel substitution. How the figure for the cost is calculated Assuming that 10 people at regional level are dedicated to coordinate the initiative and regional average salary of senior staff of CHF 100k, the total cost could be in the range of CHF 1 million (100'000 CHF x 10). In addition, a range of CAPEX projects are being considered or / and under execution. Individual details of the latter cannot be disclosed but additional references have been added in chapter 4.

**Cost of management**

1000000

**Comment**

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**Identifier**

Risk 2

**Where in the value chain does the risk driver occur?**

Investment chain

**Risk type**

Transition risk

**Primary climate-related risk driver**

Technology: Unsuccessful investment in new technologies

**Type of financial impact**

Capital investments in technology development

**Company- specific description**

Risks related to carbon capture and storage technologies, are directly assessed and managed by our Group Cement Manufacturing Excellence team based in Holderbank and our R&D Center in Lyon. Technologies such as carbon capture require large investments to materialize in direct operations and along the value chain. In order to

catalyze this level of investment, a widespread multi disciplinary collaboration including stronger regulations and effective carbon pricing mechanisms are and will be required. LafargeHolcim is currently engaged in several initiatives which require large investments and are still under evaluation. In Europe, and based on the extensive research undertaken by the European Cement Research Academy (ECRA), LafargeHolcim dedicates a cement plant in Retznei/Austria to test for the first time how the cement production process can be adapted to accommodate oxyfuel technology. The project will still require a significant investment volume and will rely on industry contributions, but significant funding from public sources will also be required. In Canada, we have initiated a project partnership to develop and demonstrate the first full-cycle solution to capture and reuse CO<sub>2</sub> from a cement plant while also reducing greenhouse gas emissions. Project CO<sub>2</sub>MENT will demonstrate and evaluate Inventys' CO<sub>2</sub> Capture System and a selection of CO<sub>2</sub> utilization technologies at Lafarge's Richmond, BC, cement plant over the next four years. The risk of the cost of technology being significantly higher than existing carbon pricing mechanisms are in place and the lack of integrated deployment of carbon capture and required supply chain ecosystems (transportation, sequestration, etc.), could therefore prevent LafargeHolcim from a successful and economically viable implementation of carbon capture technologies.

**Time horizon**

Short-term

**Likelihood**

More likely than not

**Magnitude of impact**

Low

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

<Not Applicable>

**Potential financial impact figure – minimum (currency)**

30000000

**Potential financial impact figure – maximum (currency)**

60000000

**Explanation of financial impact figure**

The potential financial impact figures relates only to the capital expenditure required, and it is consistent with LafargeHolcim recent projects and assessments. In Europe, and based on the extensive research undertaken by the European Cement Research Academy (ECRA), our industry investment and cost for the test phase amounted to around EUR 25 million. In Canada, the project CO<sub>2</sub>MENT amounted to around CAD 28 million. We have estimated an investment effort to around 30 million CHF per initiative. As described in question C2.2b, the magnitude of this scenario is considered low since estimated amount remains below < 5% of Group operating EBITDA.

**Management method**

In 2018 LafargeHolcim has launched a Group-wide initiative to future-proof its sites summarized under the flagship ambition, "The Plants of Tomorrow", which aims is to create vertically integrated, intelligent and interconnected digital plants that harness disruptive technologies. Under the coordination of our Group Cement Manufacturing Excellence team based in Holderbank, the initiative includes the test and deployment of innovative technologies such as carbon capture and storage. Some of these initiatives have already commenced. This is the case of our cement plant in Retznei/Austria which tests since 2018 the oxyfuel technology in collaboration with European Cement Research Academy (ECRA). Also recently in Canada, LafargeHolcim has initiated a project partnership with Total to develop and demonstrate the first full-cycle solution to capture and reuse CO<sub>2</sub> from a cement plant while also reducing greenhouse gas emissions. Project CO<sub>2</sub>MENT will demonstrate and evaluate Inventys' CO<sub>2</sub> Capture System and a selection of CO<sub>2</sub> utilization technologies at Lafarge's Richmond, BC, cement plant over the next four years. Our experience in these initiatives will help us to gain the required know-how to successfully deploy and further replication these technologies. The costs of the management actions have been estimated assuming a project management cost of approximately 10% the investment effort per initiative (estimated under the explanation of financial impact figure at 30 mio CHF).

**Cost of management**

3000000

**Comment**

**Identifier**

Risk 3

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type**

Physical risk

**Primary climate-related risk driver**

Chronic: Changes in precipitation patterns and extreme variability in weather patterns

**Type of financial impact**

Research and development (R&D) expenditures in new and alternative technologies

**Company- specific description**

Being present in a large number of countries increases LafargeHolcim's exposure to meteorological and geological events such as natural disasters or climate hazards which could damage LafargeHolcim's property or lead to business interruption with a material adverse effect on the Group's operations. These risks are fully covered as insurance solutions forms an integral part of risk management. Additionally LafargeHolcim counts with a Crisis Management System which sets out the basic requirements for each LafargeHolcim operation to respond against natural disasters. Today a number of our operations are located in where risks related to extreme variability in weather patterns. For instance in India, where increased flooding are projected to have an impact upon states, our subsidiaries Ambuja Cements and ACC operates with more than 30 cement and grinding operations. To date, this risks have not been materialize impacting our operations. However through scenario modeling, we have estimated the financial impact of a potential sales volume decrease resulting from meteorological conditions or geological events, considering a number of variables like: (demand forecasts, cement price development, length of business interruption).

**Time horizon**

Short-term

**Likelihood**

More likely than not

**Magnitude of impact**

Low

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

&lt;Not Applicable&gt;

**Potential financial impact figure – minimum (currency)**

10000000

**Potential financial impact figure – maximum (currency)**

20000000

**Explanation of financial impact figure**

For the potential financial impact range, we have estimated a LafargeHolcim cement plant located in India, with an annual sales volume of 1 million tons of cement that suffers a business interruption due to severe weather conditions. We have estimated the period required to overcome the interruption and be fully operational in the range of 3 to 6 months. The derived loss of volume sold will be [250'000 - 500'000] tons of cement. The calculation of the potential financial impact is completed by assuming a commercial margin of 40 CHF per tonne of product leads to a potential financial impact of [10 - 20] CHF million.

**Management method**

The management of these risks is integrated into the LafargeHolcim Group multi-disciplinary business risk management process. Macroenvironmental related risks, more specifically of natural disasters are a key criteria of the LafargeHolcim's business risk management process. Our Crisis Management System sets out the basic requirements for each LafargeHolcim operation to respond against these type of risks, including suitable Emergency Response Plan, Crisis Management Plan, Business Continuity Plan, Evacuation Plan. Additionally, Our leading positions in all regions of the world and a balanced portfolio serves as a buffer against sales variations in the markets where we operate, and the broad range of high-quality building materials and solutions combined with our transportation routes allow us to supplement business interruptions if needed. In case of this event to occur, we foresee production level adjustments in business operations that are in the proximity of the affected site combined with ad-hoc delivery routes to mitigate the impact. The cost associated to amend transportation routes are a broad estimate of the resources involved in the decision making process. Assuming that a team of 15 FTEs at Group level is dedicated to ensuring the coverage of volume demands in the markets where we operate through logistics and trading routes and assuming a global average salary of senior staff of CHF 100k, the total cost could be in the range of 1.5 Mio CHF on management costs.

**Cost of management**

1500000

**Comment****C2.4****(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?**

Yes

**C2.4a****(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.****Identifier**

Opp1

**Where in the value chain does the opportunity occur?**

Customer

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Development and/or expansion of low emission goods and services

**Type of financial impact**

Increased revenue through demand for lower emissions products and services

**Company-specific description**

Conversely, global megatrends trends (e.g. population growth and urbanization, climate change and increasing demands for limited resources) bring major challenges for our society. One of our main products, concrete, is an intrinsically low-carbon, resilient, recyclable and versatile material, and it is used across our built environment: roads, buildings, bridges, tunnels, water & energy networks, dams, ports, public transportation infrastructures and many others. It is an essential material for resilient infrastructural development and for responding to societal expectations. Buildings consume 90% of their total energy during usage through heating, lighting and air-conditioning; only 10% of consumption is linked to the manufacture of building materials and the construction phase. We have experienced an increasing demand for low-carbon solutions in the markets where we operate, requiring LafargeHolcim to go beyond "business as usual", to innovate their solution portfolio and to consider alternative business models. As a growing market opportunity, LafargeHolcim focus on developing products and solutions that contribute to improving buildings' energy efficiency, knowing that buildings today account for 40%\* of energy use and around one-third of carbon emissions worldwide (\*source: IEA website). LafargeHolcim has an important range of products and brands which can be considered as low carbon products: Ductal®, Agilia®, Thermedia 6B®, Aether®, and other solutions to provide the best solutions to its customers. Furthermore, we are developing with our fundamental research centre new products with higher CO2 savings potential (eg. Aether (30% lower in CO2) or Solidia with a potential up to 70% CO2 reduction). Currently 11% of LafargeHolcim net sales are from products and solutions with enhanced sustainability performance, half of which are identified as low carbon products.

**Time horizon**

Short-term

**Likelihood**

Likely

**Magnitude of impact**

Medium-low

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

<Not Applicable>

**Potential financial impact figure – minimum (currency)**

68750000

**Potential financial impact figure – maximum (currency)**

137500000

**Explanation of financial impact figure**

By investing in R&D and the development of new low carbon products we aim to cover the expected increase in low carbon construction products demand. We expect a growth in low-carbon product demand of 5 % to 10% on a yearly basis. The financial impact has been estimated computing this expected growth to the LafargeHolcim 2018 net sales derived from low carbon solutions representing about 5% our total CHF 27.5 bn net sales.

**Strategy to realize opportunity**

The LafargeHolcim continue to focus on developing new low carbon products and further deploy the existing ones. There are two main business activities involved: i) Our innovation Center in Lyon acts as a hub in a network of local laboratories and country-level innovation teams. The innovation organization counts more than 200 researchers within LafargeHolcim. Thanks to this networked approach, customers around the world have benefited from tailored solutions to build more quickly and efficiently, and even to reduce their impact on the environment. ii) The LafargeHolcim Foundation for Sustainable Construction promotes and encourages the development and design of a sustainable built environment. It is a key lever to identify relevant innovations in an early stage. i) Some examples: LafargeHolcim subsidiary, Holcim Mexico, has launched an innovative insulating concrete Ecoterm® that can bring energy consumption savings up to 25% compared to regular concrete. ii) Another example is the Thermedia® range of structural, insulating concrete, and our Efficient Building™ construction systems, such as double-skin concrete walls or UHPC lightweight insulated facades. The annual cost associated with developing this opportunity represents the amount spent by the company of Research and Development in 2018 (CHF 98 m, annual report 2018 page 190) and the annual budget of the LafargeHolcim Foundation for Sustainable Construction in an awards year. (CHF 5 million).

**Cost to realize opportunity**

103000000

**Comment**

**Identifier**

Opp2

**Where in the value chain does the opportunity occur?**

Direct operations

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Development and/or expansion of low emission goods and services

**Type of financial impact**

Better competitive position to reflect shifting consumer preferences, resulting in increased revenues

**Company-specific description**

It is during the production of clinker, the main component of cement, when most CO2 emissions associated with cement occur. The majority of these emissions are unavoidable, as they result from the chemical reaction that occurs when the raw material (limestone) calcinates into clinker in the kiln. This decarbonation process is our largest source of CO2 emissions, accounting for 68 percent of our total Scope 1 emissions in cement production. One of the key LafargeHolcim levers to reduce the carbon emissions from our operations, is by replacing the volumes of clinker in our final cement products with alternative mineral components such as pozzolan, slag or fly ash reduces the carbon intensity of the cement. A significant portion of these constituents come from waste or byproducts recovered from other industries. This is a company-wide initiative. Currently, Lafarge holcim products use an average of 28 percent of constituents to replace clinker, resulting in one of the lowest levels of clinker content in the sector. However, in markets where these factors are favorable, our replacement rates have reached 50 percent, presenting this as a great opportunity to further scale up this level of performance. Thanks to the replacement of clinker in our final cement products, LafargeHolcim emissions per ton of product are roughly 4 percentage points lower than the industry average (see Getting the Number Rights report 2017).

**Time horizon**

Short-term

**Likelihood**

Likely

**Magnitude of impact**

Low

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

<Not Applicable>

**Potential financial impact figure – minimum (currency)**

9240000

**Potential financial impact figure – maximum (currency)**

15400000

**Explanation of financial impact figure**

Thanks to the replacement of clinker in our final cement products, LafargeHolcim emissions per ton of product are roughly 4 percentage points lower than the industry average (see Getting the Number Rights report 2017) and we aim to further decrease it. To estimate the potential to save future CO2 costs we have assumed the scenario of reducing our clinker factor by 1 percentage point a year in our business operations in Europe. In addition, we have estimated the impact of a 1% improvement in the specific net intensity equals to a reduction in our carbon intensity of 7 kg CO2 / cementitious. Assuming an EUA price in the range of 30 to 50 CHF/t of CO2 impacting our European production the financial range estimate is [ 9,240,000 CHF - 15,400,000 CHF ]. The estimated figure shows the potential of reducing CO2 costs by reducing the clinker factor. It does not include the required investment and additional operating costs as this is competitively sensitive information.

**Strategy to realize opportunity**

As part of the decarbonization roadmap launched in Europe, a dedicated team of experts oversees and regionally coordinates the strategy of clinker factor reduction of the region, managing our product portfolio against saturation/norms compliance and quality standards. The team also manages relevant capex projects on selected kilns across the region. In Switzerland, the average cement has clinker content of around 75%, but recent efforts from Holcim Switzerland, in partnership with the Swiss Federal Institute of Technology (ETH) Zürich, have yielded a mass cement with less than 50% clinker. To replace the clinker, a combination of high-quality limestone, calcined shales and fly ash were used. A natural activator that was developed by ETH, as well as specially adapted admixtures from Sika, ensure that this low-clinker cement still retains its quality as a building material. This new cement is currently undergoing practical trials, being used for a construction project in Vorarlberg, Austria. Cost: The annual cost associated with developing this opportunity represents the cost of the Regional Cement Manufacturing Excellence resources to identify and implement the respective projects to reduce our clinker factor. Assuming that a team of 3 FTE in the region is dedicated to coordinating these activities and assuming a regional average salary of 100k CHF. It does not include the required investment and additional operating costs as this is competitively sensitive information.

**Cost to realize opportunity**

300000

**Comment**

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**Identifier**

Opp3

**Where in the value chain does the opportunity occur?**

Supply Chain

**Opportunity type**

Energy source

**Primary climate-related opportunity driver**

Use of lower-emission sources of energy

**Type of financial impact**

Reduced exposure to GHG emissions and therefore less sensitivity to changes in cost of carbon

**Company-specific description**

Another key lever to reduce the carbon intensity of our cement production is to use pretreated waste and low-carbon fuels. These serve as a replacement for fossil fuels that provide the energy needed to operate a cement kiln. Globally, LafargeHolcim currently source 18 percent of our energy from alternative fuels, low-carbon fuels and biomass. In some of our operations, we have been able to meet more than 90% percent of our energy requirements with alternative fuels, thus we are convinced of the potential to increase this rate significantly in the coming years. Using these alternative energy sources diverts waste from incineration or landfill, providing a solution to the growing waste disposal problems faced by society, and helping to keep fossil fuels in the ground. At the same time they help to reduce our CO2 emissions, as most of them emit less CO2 than traditional fuels. Other sources, such as biomass, are considered carbon neutral.

**Time horizon**

Short-term

**Likelihood**

Likely

**Magnitude of impact**

Low

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

<Not Applicable>

**Potential financial impact figure – minimum (currency)**

9240000

**Potential financial impact figure – maximum (currency)**

15400000

**Explanation of financial impact figure**

Thanks to the substitution rate of alternative fuels, LafargeHolcim emissions per ton of product are roughly 4 percentage points lower than the industry average (see Getting the Number Rights report 2017) and we aim to further increase it. To estimate the potential to save future CO2 costs we have assumed the scenario of increasing our substitution rate of alternative fuels by 2 percentage points a year in our business operations in Europe. In addition, we have estimated the impact of a 1% improvement in the specific net intensity equals to a reduction in our carbon intensity of 3.5 kg CO2 / cementitious. Assuming an EUA price in the range of 30 to 50 CHF/t of CO2 impacting our European production the financial range estimate is [ 9,240,000 CHF - 15,400,000 CHF ]. The estimated figure shows the potential of reducing CO2 costs by reducing the clinker factor. It does not include the required investment and additional operating costs as this is competitively sensitive information. .

**Strategy to realize opportunity**

Through the LafargeHolcim's business Geocycle, we offer safe and ecological waste solutions, applying the highest international standards – including the German development agency GIZ guidelines on co-processing waste and the Basel Convention. Geocycle offers strategic waste assessment and expertise regarding local regulations. It also provides logistics to transport waste to its state-of-the-art pre-processing facilities, where it is transformed into fuel and raw materials. In 2018, 18 percent of our thermal energy demand for clinker production was covered by alternative fuels. In 2018, our Austrian cement plant based in Retznei plant achieved a key milestone by reaching more than 90% of thermal substitution rate leading negative fuel cost. In Retznei, preheater kiln has been replaced by precalciner, bringing a major advantage to the kiln feeding and enabling total thermal energy costs to be reduced significantly. Retznei could be seen as a role model for other plants within the Group and industry. The annual cost associated with developing this opportunity represents the cost of the Regional EU Geocycle resources dedicated to manage these projects to increase the substitution rate of alternative fuels. Assuming that a team of 5 FTE in the region is dedicated to coordinating these activities and assuming a regional average salary of 100k CHF. It does not include the required investment and additional operating costs as this is competitively sensitive information.

**Cost to realize opportunity**

500000

**Comment**

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**(C2.5) Describe where and how the identified risks and opportunities have impacted your business.**

	Impact	Description
Products and services	Impacted	The increasing demand for low carbon products has also affected the construction sector value chain, which requires solutions and innovations for a more sustainable built environment. A description of the impact on this area of your business - LafargeHolcim has developed products and brands such as Ductal®, Agilia®, Thermedia 6B®, Aether® are generating substantial revenues and their demand in the markets where we operate continue to increase. Magnitude of impact: As described in question C2.2b, the magnitude of this impact is considered Low since its impact is estimated to be below 5% of the Group's operating EBITDA. We expect a growth in low-carbon product demand of 5 % to 10% on a yearly basis [ 68'750'000 - 137'500'000 ] as described in C2.4a .
Supply chain and/or value chain	Impacted	LafargeHolcim's supply chain has been affected by extreme weather conditions such as flooding or water shortages. Acute physical risks are therefore, included in our risk process and have impacted our business and operations continuity. A description of the impact on this area of your business - LafargeHolcim has experienced business interruptions in recent years due to acute physical risks being materializing Examples of events include effects on river based supply chains as very low (Rhine in 2018) or very high (Mississippi 2019) water levels have an impact on shipping. These events are being dealt with by our logistics departments as they implement well prepared response plans which involve a change in product sourcing from our network of plants and an adaptation of the modes of transport used, reducing the impact. Magnitude of impact: As described in question C2.2b, the magnitude of this impact is considered Low since its impact is estimated to be below 5% of the Group's operating EBITDA.
Adaptation and mitigation activities	Impacted	A description of the impact on this area of your business - In Europe, our Decarbonization Roadmap was launched to mitigate the impact of the upcoming phase IV of the European Trading System, which will come into force in 2021, bringing more strict CO2 free credit allocation systems. This European Roadmap will ensure investments of millions CHF over the next five years to further improve our processes, reduce our energy consumption and effectively deploy strategic innovations. Magnitude of the impact: As described in question C2.2b, the magnitude of this impact is considered Low since its impact is estimated to be below 5% of the Group's operating EBITDA, before taking any action and considering a neutral CO2 price development up to 2030 up to 50 CHF/ EUA (high).
Investment in R&D	Impacted	A description of the impact on this area of your business - LafargeHolcim anticipates carbon risk and opportunities through its R&D activities led by its global research center in Lyon supplemented by 13 research facilities in 10 countries. Currently the Group has 2000 granted patents or applications and a range of products and solutions with enhanced sustainability performance in the markets. Magnitude of impact - As described in question C2.2b, the magnitude of this impact is considered Low since its impact is estimated to be below 5% of the Group's operating EBITDA. LafargeHolcim's investment in Research and Development in 2018 (CHF 98 m, annual report 2018 page 190) and the annual budget of the LafargeHolcim Foundation for Sustainable Construction in an awards year. (CHF 5 million).
Operations	Impacted	A description of the impact on this area of your business - LafargeHolcim's operations are directly responsible for carbon emissions and therefore, directly impacted as per all the climate-related risks previously identified. Our cement plants continue to be the subject of continuous modernization projects to reduce CO2 emissions. This projects require a large investments. Our Group-wide initiatives focus on lowering the calorific consumption, increasing the use of alternative fuels, the production of low carbon binders and the implementation of CO2 neutral technologies in our operations. Magnitude of impact - As described in question C2.2b, the magnitude of this impact is considered Low since its impact is estimated to be below 5% of the Group's operating EBITDA. In terms of boundaries, the impact is total as LafargeHolcim Group-wide CO2 reduction strategy targets all our operations. In 2018, a number of large investments were successfully implemented, and in 2019 and following years, a large number of new projects are expected to commence or conclude.
Other, please specify	We have not identified any risks or opportunities	

**C2.6**

**(C2.6) Describe where and how the identified risks and opportunities have been factored into your financial planning process.**

	Relevance	Description
Revenues	Impacted	A description of the impact on this area of your financial planning process - The increasing demand for low carbon products has directly impacted LafargeHocim's revenue profile. In 2018, 11% of LafargeHolcim net sales came from products and solutions with enhanced sustainability performance (compared to 8% in 2017). Revenues coming from low carbon cement products and services has therefore a direct impact on our product portfolio management. This increasing demand for lower carbon products had been factored into financial forecasts and budgets. Additionally, LafargeHolcim dedicates a budget for the research and development of new low carbon products in our R&D center in Lyon as well as for optimizing the product portfolio in our existing markets. Magnitude of impact - As described in question C2.2b, the magnitude of this impact is considered Low since its impact is estimated to be below 5% of the Group's operating EBITDA. We expect a growth in low-carbon product demand of 5 % to 10% on a yearly basis [ 68'750'000 - 137'500'000 CHF] as described in C2.4a. In 2018, 11% of LafargeHolcim net sales came from products and solutions with enhanced sustainability performance. LafargeHolcim's investment in Research and Development in 2018 (CHF 98 m, annual report 2018 page 190) and the annual budget of the LafargeHolcim Foundation for Sustainable Construction in an awards year. (CHF 5 million).
Operating costs	Impacted	A description of the impact on this area of your financial planning process - The rising carbon price in EU-ETS had an impact on our European operations and has been factored in our financial short and mid term planning process. Additionally, the upcoming phase IV of the European Trading System coming into force in 2021, will bring more strict CO2 free credit allocation systems. Through the modeling of various scenarios, we have estimated the financial impact of the upcoming phase IV of the EU ETS. The results of this assessment have been used to inform our strategy and business plan, including the relevant operating costs affected. As a result a dedicated decarbonization roadmap in Europe has commenced with considers investments to reduce our emissions. All projects are also contributing to savings in production costs by replacing traditional fuel by less expensive alternative sources. Magnitude of impact - As described in question C2.2b, the magnitude of this impact is considered Low since its impact is estimated to be below 5% of the Group's operating EBITDA. The cost estimated in C2.3a has been included in our financial planning process, as well as the operating costs resulting from the various investments.
Capital expenditures / capital allocation	Impacted	A description of the impact on this area of your financial planning process - As part of the Lafarge holcim European decarbonization roadmap, we invest in the adaptation of kilns to enable the use of different fuel types and waste streams used as alternative fuels. This requires CAPEX, as do other initiatives such as upgrades to plant and technologies to improve energy and process efficiency necessary to lower our emissions. Magnitude of impact - As described in question C2.2b, the magnitude of this impact is considered Low since its impact is estimated to be below 5% of the Group's operating EBITDA. The cost estimated in C2.3a has been included in our financial planning process, as well as the operating costs resulting from the various investments.
Acquisitions and divestments	Impacted	A description of the impact on this area of your financial planning process - Four bolt-on acquisitions were completed in 2018 in Europe and North America which drove LafargeHolcim growth and added to the company's presence in ready-mix concrete and aggregates. These acquisitions brought our company closer to our end-customer product and will help us to reduce our carbon intensity in the coming years. Additionally, in the course of 2019, LafargeHolcim has divested its operations in Malaysia, the Philippines and Indonesia. This will positively impact our carbon intensity performance. Magnitude of impact - As described in question C2.2b, the magnitude of this impact is considered Low since its impact is estimated to be above 15% of Group's operating EBITDA. Net acquisitions (disposals) 4 million CHF. Page 192 Annual Report
Access to capital	Impacted	A description of the impact on this area of your financial planning process - The LafargeHolcim Investor Relations department, has experienced how an increasing number of investors and financial analysts are interested in specific details of our sustainability ambition, and very specifically on our CO2 strategy. Engagements about climate related topics with investors happen now on a regular basis. LafargeHolcim supports the voluntary recommendations of the Financial Stability Board (FSB) Task force on Climate-related Financial Disclosures. On page 26 of the LafargeHolcim 2018 Sustainability Report, LafargeHolcim displays a table where the recommended TCFD disclosures can be found in our mainstream reports. We will continue to enhance our disclosures in future reporting cycles. Magnitude of impact - As described in question C2.2b, the magnitude of this impact is considered Low since its impact is estimated to be below 5% of the Group's operating EBITDA.
Assets	Impacted for some suppliers, facilities, or product lines	A description of the impact on this area of your financial planning process - At Lafarge holcim we continue to invest in the modernization of our cement plants and kilns to increase the use of different fuel types and waste streams used as alternative fuels, and to improve energy and process efficiency necessary to lower our emissions. Magnitude of impact - As described in question C2.2b, the magnitude of this impact is considered Low since its impact is estimated to be below 5% of the Group's operating EBITDA. The cost estimated in C2.3a has been included in our financial planning process, as well as the operating costs resulting from the various investments.
Liabilities	Not impacted	The risks and opportunities identified in sections 2.3 and 2.4 does not have a significant impact on liabilities.
Other	We have not identified any risks or opportunities	

## C3. Business Strategy

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### C3.1

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#### **(C3.1) Are climate-related issues integrated into your business strategy?**

Yes

### C3.1a

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#### **(C3.1a) Does your organization use climate-related scenario analysis to inform your business strategy?**

Yes, qualitative and quantitative

### C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b

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#### **(C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b) Indicate whether your organization has developed a low-carbon transition plan to support the long-term business strategy.**

Yes

### C3.1c

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#### **(C3.1c) Explain how climate-related issues are integrated into your business objectives and strategy.**

##### **i. A company-specific explanation of how business objectives and strategy have been influenced by climate-related issues**

In 2018 LafargeHolcim launched its new Strategy 2022 "Building for Growth" and climate and energy remains identified as one of LafargeHolcim's four strategic value drivers under "People & Vision". LafargeHolcim identified the main concerns of our stakeholders through a materiality assessment done with the support of an external consultancy. We engaged DNV GL who undertook a process aligned with the GRI G4 reporting guidelines. We included external and internal stakeholders, peer and industry research, and wider sustainability trends to identify and prioritize the most important issues. Climate change was then identified as one of the main concerns and the topic is in the heart of our strategy. Group CO2 reduction targets have been put in place across the organization to minimize climate related risks and leverage respective opportunities.

##### **ii. Explanation of whether your business strategy is linked to an emissions reductions target or energy reduction target**

In 2018 LafargeHolcim revisited its former CO2 ambition based on new external references and revised internal scenario planning, and accounting for current national climate change ambitions in the countries we operate, as well as limited progress toward those targets. With our revised target of 520 kg CO2/tonne by 2030, we remain committed to reducing emission levels in line with a 2 degree scenario, aligned with the Low-carbon technology roadmap defined for our sector by the International Energy Agency (IEA) and as agreed at the COP21 world climate conference in Paris. In our scenario planning, we considered the impact of a high, medium and low variability of regulatory framework incentives on our potential to reduce emissions. Our goal is consistent with a "medium" variability of regulatory framework incentives, which we arrived at by following the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).

##### **iii. What have been the most substantial business decisions made during the reporting year that have been influenced by the climate change driven aspects of the strategy (e.g. investment, location, procurement, mergers and acquisitions (M&A), research and development (R&D))**

Our CO2 emission target has influenced and informed LH Group's strategy significantly with strong commitments to increase clinker substitution and the use of alternative fuels as well, leading to a range of investments in innovation and plants' modernization. LH has developed two sets of actions, short and long term, to address the CO2 and climate challenge along the construction value chain.

a) Short term actions: (i) improved clinker production technology; (ii) higher usage of alternative fuels and alternative raw materials; (iii) Optimization of the cement portfolio with lower CO2 footprint; (iv) optimization of the concrete product portfolio; (v) increase weight of Solutions and Products with favorable CO2 impact. These actions are combined in regional strategies with dedicated provisions, such as the European Decarbonization Roadmap, which in 2018 has been put in place to manage the potential impact of the upcoming phase 4 under the EU-ETS, after having assessed a range of plausible scenarios of regulation developments.

b) Long term actions: Innovation and research and development into (i) Carbon capture solutions and alternative clinker; (ii) decarbonized fuel and energy; (iii) low carbon cement; (iv) low carbon concrete; (v) ultimate construction methods to reach low carbon construction. With regards to Carbon capture solutions, LafargeHolcim is currently engaged in several initiatives which require large investments and are still under evaluation, in Europe and North America. About low carbon products, in 2018 LafargeHolcim invested CHF 98 m in Research and Development with the objective of, not only to reduce the footprint of specific products, but also to provide solutions that can be manufactured on a large scale through potential adaptations of existing production facilities

### C3.1d

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**(C3.1d) Provide details of your organization’s use of climate-related scenario analysis.**

Climate-related scenarios	Details
2DS	<p>During 2017 and 2018, LafargeHolcim collaborated actively with the International Energy Agency to update the Cement Low-carbon Technology Roadmap. The work was published in April 2018, and conducted scenario analyses against various references: i) the reference technology scenario (RTS), ii) nationally determined contributions (NDCs) and iii) former IEA 2DS for the cement industry. As a result of this exercise, LafargeHolcim revisited its level of ambition to ensure alignment with the IEA roadmap. We considered 2022, 2030 and 2050 to define our short, mid and long term time horizons.</p> <p>i) 2050: For the Low Carbon Technology Roadmap for the Cement industry, global megatrends impacting the building construction sector such as Increasing global population and urbanisation patterns were considered as drivers to impact the demand for cement and concrete. As a result, global cement production growth estimates were assessed by 2050 compared to current levels. As a standard criteria of the IEA, the 2DS sets the target of cutting CO2 emissions by almost 60% by 2050 (compared with 2013), followed by continued decline after 2050 until carbon neutrality is reached. The relevance to our organization lies on the opportunities of the successful deployment and scale-up of innovative technologies such as carbon capture and storage, without which carbon neutrality for cement production cannot be achieved. This has influenced our 2050 vision for the built environment. ii) 2022 and 2030. For the process of reviewing our targets and ambition levels we reviewed our short (2022) and mid term time-horizons (2030). Aligning with the Group Strategy 2022, we have now stated an interim 2022 target, replacing our previous 2020 and 2025 targets. 2030 time horizon remains unchanged. We have also assessed the potential room for improvement of the existing climate-related levers at site level: i) clinker factor ii) thermal substitution rate, iii) energy efficiency and iv) innovation. In view of the expected timeframe to deploy innovative technologies such as carbon capture and storage CCU/S, these were excluded from our projections. Additionally, in our scenario planning, we considered the impact of a high, medium and low variability of regulatory framework incentives on our potential to reduce emissions. Our 2030 goal is consistent with a "medium" variability of regulatory framework incentives. We considered a range of areas within our organisation that as part of the scenario analysis, assessing potential impacts, risks and opportunities. Some examples are: i) Supply chain: level of ambition being impacted by increasing the price of fuels and alternative raw materials availability. Risks of business interruption due to changes in weather precipitations. ii) Geocycle: waste derived resources availability and increasing number of waste-related regulations supporting the business case of traditional fuels replacement in cement kilns and construction materials (recycled aggregates) iii) Procurement: increasing price of traditional fuels and alternative binders, leading to a need of securing these sources for the time horizons considered. As a result of this scenario analysis our climate ambition was impacted. With our revised target of 520 kg CO2/tonne by 2030, we remain committed to reducing emission levels in line with a 2 degree scenario, aligned with the Low-carbon technology roadmap defined for our sector by the International Energy Agency (IEA) and as agreed at the COP21 world climate conference in Paris. These revisited ambitions had a range of impacts on our business objectives and strategy for example in terms of capital expenditure, energy sourcing strategies and operating costs. Organizationally, the Group leadership team included a Chief Sustainability Officer reporting directly to the Group CEO and oversigning all climate related aspects of the strategy.</p>

**C-AC3.1e/C-CE3.1e/C-CH3.1e/C-CO3.1e/C-EU3.1e/C-FB3.1e/C-MM3.1e/C-OG3.1e/C-PF3.1e/C-ST3.1e/C-TO3.1e/C-TS3.1e**

**(C-AC3.1e/C-CE3.1e/C-CH3.1e/C-CO3.1e/C-EU3.1e/C-FB3.1e/C-MM3.1e/C-OG3.1e/C-PF3.1e/C-ST3.1e/C-TO3.1e/C-TS3.1e) Disclose details of your organization’s low-carbon transition plan.**

LafargeHolcim CO2 ambition, targets and aspirations for 2022 and 2030, have been cascaded across all business units by the integration in the business management plan of the respective levers. The levers we are currently employing to reduce carbon intensity per tonne of cement are outlined below:

**Clinker substitution:** Clinker is the main component of cement and we aim to substitute it with mineral components such as limestone, pozzolan, slag or fly ash. Currently, the products we market use on average 28 percent of constituents to replace clinker. A significant portion of these constituents come from waste or byproducts recovered from other industries.

**Waste-derived fuels and biomass:** These serve as a replacement for fossil fuels that provide the energy needed to operate a cement kiln. Also known as alternative fuels or low-carbon fuels, these energy sources divert waste from incineration or landfill, helping to keep fossil fuels in the ground. We are currently able to source 18 percent of our energy needs from low-carbon fuels and biomass.

**Increased energy efficiency:** Cement production is an energy-intensive manufacturing process, with energy efficiency and security of supply being key business drivers. We are optimizing our low-carbon power-producing assets across our production plant portfolio. We are also investing in or purchasing renewable power when it is economically advantageous and investigating opportunities to generate renewable energy by using our land for windmills or solar panel farms, or using quarries as water reservoirs for hydropower.

**Innovation:** We are continually exploring new strategies and technologies, such as carbon capture and usage with projects in North America and Europe. Additionally, we have significantly invested in the development of low-carbon solutions, led by our R&D center in Lyon, France. Thanks to this commitment, today we have a broad portfolio of low-carbon projects – including low-carbon clinker, cement, concrete, and binders – and we are seeking opportunities in carbon sequestration.

**Risk and opportunities:** To address the risks and identify opportunities, the LafargeHolcim risk management process is structured around several coordinated approaches conducted within the Group and it is subject to continuous improvement. It includes a bottom-up and top-down risk assessments which cover climate related risks and opportunities. These assessments are used as a basis for the Group risk map, which is updated every year and submitted and analysed by the Group’s Executive Committee and the Audit Committee.

**Transparency:** As a business leader, we must ensure transparency and action around climate-related risks and opportunities. LafargeHolcim supports the voluntary recommendations of the Financial Stability Board (FSB) Task force on Climate-related Financial Disclosures. On page 26 of the LafargeHolcim 2018 Sustainability Report, LafargeHolcim displays a table where the recommended TCFD disclosures can be found in our mainstream reports. We will continue to enhance our disclosures in future reporting cycles.

**C4. Targets and performance**

**C4.1**

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**(C4.1) Did you have an emissions target that was active in the reporting year?**

Intensity target

**C4.1b**

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**(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).****Target reference number**

Int 1

**Scope**

Scope 1

**% emissions in Scope**

95

**Targeted % reduction from base year**

33

**Metric**

Other, please specify (Net specific CO2 per tonne cementitious )

**Base year**

1990

**Start year**

2015

**Normalized base year emissions covered by target (metric tons CO2e)**

772

**Target year**

2030

**Is this a science-based target?**

Yes, we consider this a science-based target, but this target has not been approved as science-based by the Science Based Targets initiative

**% of target achieved**

78

**Target status**

Revised

**Please explain**

In 2018 we revisited our CO2 ambition based on new external references and revised internal scenario planning, and accounted for current national climate change ambitions in the countries we operate. With our revised target of 520 kg CO2/tonne by 2030, we remain committed to reducing emission levels in line with a 2 degree scenario, aligned with the Low-carbon technology roadmap defined for our sector by the International Energy Agency (IEA) and as agreed at the COP21 world climate conference in Paris. In our scenario planning, we considered the impact of a high, medium and low variability of regulatory framework incentives on our potential to reduce emissions. Our goal is consistent with a "medium" variability of regulatory framework incentives, which we arrived at by following the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). In addition, aligning with the timeframe of the Group Strategy 2022, we are now stating an interim 2022 target of 560 kg CO2/tonne by 2022, replacing the 2020 and 2025 targets previously in place. This revised 2030 target has been translated into progressive yearly reduction targets of absolute and intensity emissions. In 2018, our net CO2 emissions per tonne of cementitious material decreased to 576 kg CO2/tonne, a 1 percent reduction from 2017 and equal to a 25 percent reduction compared with 1990 emissions.

**% change anticipated in absolute Scope 1+2 emissions**

0

**% change anticipated in absolute Scope 3 emissions**

0

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**Target reference number**

Int 2

**Scope**

Scope 1

**% emissions in Scope**

95

**Targeted % reduction from base year**

27

**Metric**

Other, please specify (Net specific CO2 per tonne cementitious )

**Base year**

1990

**Start year**

2015

**Normalized base year emissions covered by target (metric tons CO2e)**

772

**Target year**

2022

**Is this a science-based target?**

Yes, we consider this a science-based target, but this target has not been approved as science-based by the Science Based Targets initiative

**% of target achieved**

92

**Target status**

Revised

**Please explain**

In 2018 we revisited our CO2 ambition based on new external references and revised internal scenario planning, and accounted for current national climate change ambitions in the countries we operate. With our revised target of 520 kg CO2/tonne by 2030, we remain committed to reducing emission levels in line with a 2 degree scenario, aligned with the Low-carbon technology roadmap defined for our sector by the International Energy Agency (IEA) and as agreed at the COP21 world climate conference in Paris. In our scenario planning, we considered the impact of a high, medium and low variability of regulatory framework incentives on our potential to reduce emissions. Our goal is consistent with a "medium" variability of regulatory framework incentives, which we arrived at by following the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). In addition, aligning with the timeframe of the Group Strategy 2022, we are now stating an interim 2022 target of 560 kg CO2/tonne by 2022, replacing the 2020 and 2025 targets previously in place. This revised 2030 target has been translated into progressive yearly reduction targets of absolute and intensity emissions. In 2018, our net CO2 emissions per tonne of cementitious material decreased to 576 kg CO2/tonne, a 1 percent reduction from 2017 and equal to a 25 percent reduction compared with 1990 emissions.

**% change anticipated in absolute Scope 1+2 emissions**

0

**% change anticipated in absolute Scope 3 emissions**

0

**C4.2**

**(C4.2) Provide details of other key climate-related targets not already reported in question C4.1/a/b.**

**C4.3**

**(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.**

Yes

**C4.3a**

**(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.**

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	50	3000000
To be implemented*	20	1000000
Implementation commenced*	10	130000
Implemented*	20	297700
Not to be implemented	1	25000

**C4.3b**

**(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.**

**Initiative type**

Low-carbon energy purchase

**Description of initiative**

Other, please specify (Waste-derived fuels including biomass)

**Estimated annual CO2e savings (metric tonnes CO2e)**

290000

**Scope**

Scope 1

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in C0.4)**

7250000

**Investment required (unit currency – as specified in C0.4)**

20000000

**Payback period**

1-3 years

**Estimated lifetime of the initiative**

21-30 years

**Comment**

This includes 18 alternative fuels projects and activities implemented across the Group.

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**Initiative type**

Energy efficiency: Processes

**Description of initiative**

Process optimization

**Estimated annual CO2e savings (metric tonnes CO2e)**

7000

**Scope**

Scope 2 (market-based)

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in C0.4)**

1070000

**Investment required (unit currency – as specified in C0.4)**

44800000

**Payback period**

4 - 10 years

**Estimated lifetime of the initiative**

21-30 years

**Comment**

Installation of new facility. Annual monetary savings disclosed are only related to energy savings and represent only a fraction of the overall project payback.

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**Initiative type**

Energy efficiency: Processes

**Description of initiative**

Process optimization

**Estimated annual CO2e savings (metric tonnes CO2e)**

700

**Scope**

Scope 2 (market-based)

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in C0.4)**

176000

**Investment required (unit currency – as specified in C0.4)**

38500000

**Payback period**

4 - 10 years

**Estimated lifetime of the initiative**

21-30 years

**Comment**

Expansion and modernization of existing facility. Annual monetary savings disclosed are only related to energy savings and represent only a fraction of the overall project payback.

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C4.3c

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**(C4.3c) What methods do you use to drive investment in emissions reduction activities?**

Method	Comment
Dedicated budget for low-carbon product R&D	In addition to addressing industrial performance, LafargeHolcim also harnesses R&D to develop new lower-carbon cements. In 2018, LafargeHolcim invested CHF 98 m in Research and Development (annual report 2018 page 190). The objective of this research is not only to reduce the footprint of specific products, but also to provide solutions that can be manufactured on a large scale through potential adaptations of existing production facilities. R&D can also result in beneficial performance characteristics (in some countries, LafargeHolcim advocates for changing building codes, norms and standards to accept new low-carbon innovative products). The R&D project pipeline consists out of 10 high-priority innovation projects, out of which 6 directly relate to reducing carbon footprint (e.g. calcined clay or mineral foam concrete for thermal insulation) and 10 next generation ("new") innovation projects, out of which 6 directly relate to low carbon as well, with two further projects to be potentially counted in. In addition, in 2018 we launched the LH Accelerator, together with partners Sika and China Communications Construction Company (CCCC). Start-ups and partners from around the world were invited to work collaboratively and to combine new ideas of start-ups with the proven experience of major players. The ambition: to tackle today's challenges along the entire construction value chain.
Compliance with regulatory requirements/standards	Finance, Public Affairs and Sustainability teams develop in collaboration different scenarios analysis to quantify the potential impacts of regulatory requirements / standards. This work is used to inform regional and country existing business plans and short term strategies when significant risks are identified, leading to investments in emissions reduction activities where needed. An example is the transition to the phase 4 of the new European Trading System where LafargeHolcim has implemented a regional-wide decarbonization roadmap. As part of this roadmap, a number of CAPEX projects are being considered or / and under execution, aiming to improve our operations' energy efficiency and reduce carbon intensity.
Internal price on carbon	LafargeHolcim promotes the use of the Integrated (Economic, Social and Environmental) Profit and Loss Statement (IPL) methodology as a fundamental tool to assess the future investments to achieve the company's sustainability ambition. This methodology quantifies the equivalent economic value on the social and environmental externalities related to the company's new projects, to raise awareness of how they may or may not affect LafargeHolcim's business, and to assess their relative importance in the decision making process. In this process a list of initiatives are proposed to achieve defined targets. A Social and Environmental PL assessment can be conducted for each of the initiatives, considering a price for carbon and other externalities. In 2013, legacy Holcim completed a pilot project in India – the largest cement market for Holcim that assigned a price to CO2, determined a cost abatement curve and subsequently derived investment decisions for the period 2013 – 2020 to reduce its carbon footprint, while improving its profitability.

**C4.5**

**(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?**

Yes

**C4.5a**

**(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.**

**Level of aggregation**

Group of products

**Description of product/Group of products**

LafargeHolcim has an important range of products and brands which can be considered as low carbon products. They can be considered as low carbon products because of having lower CO2 emissions during the production of the clinker - and/or lower clinker content in cement, and/or lower transportation CO2 impact due to the weight, and/or increase a construction's efficiency over its entire life cycle. LafargeHolcim has a specific definition of sustainable solutions with the following classifications relating to low carbon: Energy Efficiency Solutions: Solutions that improve the energy efficiency in buildings (heating and cooling) while providing better indoor comfort, compared to the next best alternative. Examples: AIRIUM, Thermedia, Geothermal mortars Circular economy solutions: Solutions which save raw material extraction and hence carbon emissions by reuse of mineral materials for aggregates, concrete or cement, e.g. by: Alternative aggregates used for roads and infrastructure Excavation materials backfilling integrated in the aggregates commercial offer Concrete or asphalt which includes a high proportion of alternative aggregates Examples: Aggneo®, Full depth reclamation for road maintenance Solutions which save carbon emissions through waste management services, e.g.: Waste management services Use of waste derived materials as alternative fuels and raw materials Examples: Geocycle on-site total waste management services for L'Oreal, Mexico Resource efficient solutions: Solutions that compared to the next best alternative: Have a longer service life and decreasing needs for maintenance Require less material to achieve the same performance Examples: Ductal®, LafargeHolcim road solutions, Extensia® Low carbon materials and solutions: Products and solutions which have specific net CO2 emissions lower than the regional benchmark or which contribute to reduced lifecycle carbon emissions. Examples: Solidia, Aether, specifically designed towers for windmills (renewable power) We measuring the commercial success and growth of our low carbon solutions on an annual basis. Out of the 11% net sales with sustainable solutions in total, low carbon solutions makeup for ~8% points [2018 figures].

**Are these low-carbon product(s) or do they enable avoided emissions?**

Low-carbon product

**Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions**

Other, please specify (LafargeHolcim Sustainable Solution Guidelines)

**% revenue from low carbon product(s) in the reporting year**

8

**Comment**

LafargeHolcim's wide range of low-carbon products (Ductal®, Chronolia®, Agilia®, Artevia®, or Thermedia 6B® for example) enables to reduce both CO2 emissions generated by the production process and CO2 emissions for our clients in the building sector. Furthermore, we are developing with our fundamental research centre new products with higher CO2 savings potential (eg. Aether (30% lower in CO2) or Solidia with a potential up to 70% CO2 reduction). Please note the 11 % revenue refers to the total percentage of sustainable Solutions in 2018.

**Level of aggregation**

Please select

**Description of product/Group of products**

**Are these low-carbon product(s) or do they enable avoided emissions?**

Please select

**Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions**

Please select

**% revenue from low carbon product(s) in the reporting year**

**Comment**

**(C-CE4.9) Disclose your organization’s best available techniques as a percentage of Portland cement clinker production capacity.**

	Total production capacity coverage (%)
4+ cyclone preheating	12
Pre-calcliner	80

C5. Emissions methodology

C5.1

**(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).**

**Scope 1**

**Base year start**

January 1 1990

**Base year end**

December 31 1990

**Base year emissions (metric tons CO2e)**

90705285

**Comment**

1990 Net CO2 baseline is only available for Cement operations. Changes in the baseline compared to 2018 submission are due to the divestment of two sites, Gongxian and Sanchain in China. Additionally, to align with Group financial reporting, and in preparation for a transition to integrated reporting, we have changed our consolidation scope to include the entities covered in the Group consolidated financial statements.

**Scope 2 (location-based)**

**Base year start**

January 1 1990

**Base year end**

December 31 1990

**Base year emissions (metric tons CO2e)**

6112796

**Comment**

Due to lack of data availability of 1990 Scope 2 emissions, market and location base are considered equal. 1990 Net CO2 baseline is only available for Cement operations. Changes in the baseline compared to 2018 submission are due to the divestment of two sites, Gongxian and Sanchain in China. Additionally, to align with Group financial reporting, and in preparation for a transition to integrated reporting, we have changed our consolidation scope to include the entities covered in the Group consolidated financial statements.

**Scope 2 (market-based)**

**Base year start**

January 1 1990

**Base year end**

December 31 1990

**Base year emissions (metric tons CO2e)**

6112796

**Comment**

Due to lack of data availability of 1990 Scope 2 emissions, market and location base are considered equal. 1990 Net CO2 baseline is only available for Cement operations. Changes in the baseline compared to 2018 submission are due to the divestment of two sites, Gongxian and Sanchain in China. Additionally, to align with Group financial reporting, and in preparation for a transition to integrated reporting, we have changed our consolidation scope to include the entities covered in the Group consolidated financial statements.

C5.2

**(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions.**

WBCSD: The Cement CO2 and Energy Protocol

C6. Emissions data

## C6.1

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### (C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?

#### Reporting year

**Gross global Scope 1 emissions (metric tons CO2e)**

134591919

**Start date**

January 1 2018

**End date**

December 31 2018

**Comment**

Total Scope 1 emissions for all segments: Cement, Aggregates, Ready Mix Concrete , Asphalt and Own power generation

#### Past year 1

**Gross global Scope 1 emissions (metric tons CO2e)**

141331412

**Start date**

January 1 2017

**End date**

December 31 2017

**Comment**

Total global Scope 1 emissions as reported in the last year CDP disclosure. (Used as reference emissions in C7.9a)

## C6.2

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### (C6.2) Describe your organization's approach to reporting Scope 2 emissions.

#### Row 1

**Scope 2, location-based**

We are reporting a Scope 2, location-based figure

**Scope 2, market-based**

We are reporting a Scope 2, market-based figure

**Comment**

Please note that the number published in the 2018 sustainability report follows the marked based approach as our operations have the possibilities to update the national grid average with the supplier specific data if relevant. Location based Scope figures are publicly disclosed in the CDP submission.

## C6.3

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**(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?**

**Reporting year**

**Scope 2, location-based**

8286502

**Scope 2, market-based (if applicable)**

8385513

**Start date**

January 1 2018

**End date**

December 31 2018

**Comment**

**Past year 1**

**Scope 2, location-based**

9249277

**Scope 2, market-based (if applicable)**

9521995

**Start date**

January 1 2017

**End date**

December 31 2017

**Comment**

Gross global Scope 2 emissions as reported in the last year CDP disclosure. (Used as reference emissions in C7.9a)

**C6.4**

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**(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?**

No

**C6.5**

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**(C6.5) Account for your organization's Scope 3 emissions, disclosing and explaining any exclusions.**

**Purchased goods and services**

**Evaluation status**

Relevant, calculated

**Metric tonnes CO2e**

4127662

**Emissions calculation methodology**

Purchased goods and services emissions have been assessed according to the Cement Sector Scope 3 GHG Accounting and Reporting Guidance developed by the WBCSD Cement Sustainability Initiative. For this purpose we have assessed the most significant of our suppliers emissions due to clinker bought used in the production process during 2018. For the assessment we have used the global purchase volume by the group multiplied by the estimated emission factor for clinker bought according to the WBCSD-CSI CO2 Reporting protocol.

**Percentage of emissions calculated using data obtained from suppliers or value chain partners**

0

**Explanation**

**Capital goods**

**Evaluation status**

Not relevant, explanation provided

**Metric tonnes CO2e**

<Not Applicable>

**Emissions calculation methodology**

<Not Applicable>

**Percentage of emissions calculated using data obtained from suppliers or value chain partners**

<Not Applicable>

**Explanation**

Scope 3 emissions assessment has been made following the material categories of the Cement Sector Scope 3 GHG Accounting and Reporting Guidance developed by the WBCSD Cement Sustainability Initiative which indicates that the source "Capital goods" is not required. After an assessment made and considering the share of these emissions within the total Scope 3 emissions for the cement industry, the source "Capital goods" has been considered as not relevant.

## Fuel-and-energy-related activities (not included in Scope 1 or 2)

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

7512648

### Emissions calculation methodology

Fuel-and-energy-related activities (not included in Scope 1 or 2) emissions have been assessed according to the Cement Sector Scope 3 GHG Accounting and Reporting Guidance developed by the WBCSD Cement Sustainability Initiative. Fuel and energy related activities include mainly extraction, refining and transportation of LafargeHolcim raw fuel sources.

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

### Explanation

## Upstream transportation and distribution

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

226730

### Emissions calculation methodology

Upstream transportation and distribution emissions have been assessed according to the Cement Sector Scope 3 GHG Accounting and Reporting Guidance developed by the WBCSD Cement Sustainability Initiative. The calculation is based on the transportation of raw material(including bought clinker), MIC and traditional fuels reported in our inventories. All raw materials are assumed to come by truck. The emission factor comes from the reference database used in our verified Product Carbon Footprinting tool.

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

### Explanation

## Waste generated in operations

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Explanation

Scope 3 emissions assessment has been made following the material categories of the Cement Sector Scope 3 GHG Accounting and Reporting Guidance developed by the WBCSD Cement Sustainability Initiative which indicates that the source "Waste generated in operations" is not required. After an assessment made and considering the share of these emissions within the total Scope 3 emissions for the cement industry, the source "Waste generated in operations" has been considered as not relevant.

## Business travel

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

212200

### Emissions calculation methodology

Business travel emissions have been assessed according to WBCSD CSI Scope 3 methodology. The calculation is based on the estimates of domestic and overseas travels of our employees, with an average emission factor per FTE estimated from the data provided by two representative group companies from their travel agent.

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

### Explanation

## Employee commuting

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

92371

### Emissions calculation methodology

Employee commuting emissions have been assessed according to WBCSD CSI Scope 3 methodology. We assume that all employees commute for 30 km each day and 50% travel by car while the other use public transportation.

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

### Explanation

## Upstream leased assets

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Explanation

Scope 3 emissions assessment has been made following the material categories of the Cement Sector Scope 3 GHG Accounting and Reporting Guidance developed by the WBCSD Cement Sustainability Initiative which indicates that the source "Upstream leased assets" is not required. After an assessment made and considering the share of these emissions within the total Scope 3 emissions for the cement industry, the source "Upstream leased assets" has been considered as not relevant.

## Downstream transportation and distribution

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

9304751

### Emissions calculation methodology

Downstream transportation and distribution emissions have been assessed according to the Cement Sector Scope 3 GHG Accounting and Reporting Guidance developed by the WBCSD Cement Sustainability Initiative. Downstream transportation and distribution is confirmed in the case of LH and this source includes: i) Transportation of clinker to another company and ii) Transportation of cement, ready mix, aggregates, asphalt and concrete products to retailers.

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

### Explanation

## Processing of sold products

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Explanation

Scope 3 emissions assessment has been made following the material categories of the Cement Sector Scope 3 GHG Accounting and Reporting Guidance developed by the WBCSD Cement Sustainability Initiative which indicates that the source "Processing of sold products" is not required. After an assessment made and considering the share of these emissions within the total Scope 3 emissions for the cement industry, the source "Processing of sold products" has been considered as not relevant.

## Use of sold products

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Explanation

Scope 3 emissions assessment has been made following the material categories of the Cement Sector Scope 3 GHG Accounting and Reporting Guidance developed by the WBCSD Cement Sustainability Initiative which indicates that the source "Use of sold products" is not required. After an assessment made and considering the share of these emissions within the total Scope 3 emissions for the cement industry, the source "Use of sold products" has been considered as not relevant.

## End of life treatment of sold products

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Explanation

Scope 3 emissions assessment has been made following the material categories of the Cement Sector Scope 3 GHG Accounting and Reporting Guidance developed by the WBCSD Cement Sustainability Initiative which indicates that the source "End of life treatment of sold products" is not required. After an assessment made and considering the share of these emissions within the total Scope 3 emissions for the cement industry, the source "End of life treatment of sold products" has been considered as not relevant.

## Downstream leased assets

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Explanation

Scope 3 emissions assessment has been made following the material categories of the Cement Sector Scope 3 GHG Accounting and Reporting Guidance developed by the WBCSD Cement Sustainability Initiative which indicates that the source "Downstream leased assets" is not required. After an assessment made and considering the share of these emissions within the total Scope 3 emissions for the cement industry, the source "Downstream leased assets" has been considered as not relevant.

## Franchises

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Explanation

Scope 3 emissions assessment has been made following the material categories of the Cement Sector Scope 3 GHG Accounting and Reporting Guidance developed by the WBCSD Cement Sustainability Initiative which indicates that the source "Franchises" is not required. After an assessment made and considering the share of these emissions within the total Scope 3 emissions for the cement industry, the source "Franchises" is considered as not relevant.

## Investments

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Explanation

Scope 3 emissions assessment has been made following the material categories of the Cement Sector Scope 3 GHG Accounting and Reporting Guidance developed by the WBCSD Cement Sustainability Initiative which indicates that the source "Investments" is not required. After an assessment made and considering the share of these emissions within the total Scope 3 emissions for the cement industry, the source "Investments" has been considered as not relevant.

**Other (upstream)**

**Evaluation status**

Not relevant, explanation provided

**Metric tonnes CO2e**

<Not Applicable>

**Emissions calculation methodology**

<Not Applicable>

**Percentage of emissions calculated using data obtained from suppliers or value chain partners**

<Not Applicable>

**Explanation**

Scope 3 emissions assessment has been made following the material categories of the Cement Sector Scope 3 GHG Accounting and Reporting Guidance developed by the WBCSD Cement Sustainability Initiative which indicates that the source "Other (upstream)" is not required. After an assessment made and considering the share of these emissions within the total Scope 3 emissions for the cement industry, the source "Other (upstream)" has been considered as not relevant.

**Other (downstream)**

**Evaluation status**

Not relevant, explanation provided

**Metric tonnes CO2e**

<Not Applicable>

**Emissions calculation methodology**

<Not Applicable>

**Percentage of emissions calculated using data obtained from suppliers or value chain partners**

<Not Applicable>

**Explanation**

Scope 3 emissions assessment has been made following the material categories of the Cement Sector Scope 3 GHG Accounting and Reporting Guidance developed by the WBCSD Cement Sustainability Initiative which indicates that the source "Other (downstream)" is not required. After an assessment made and considering the share of these emissions within the total Scope 3 emissions for the cement industry, the source "Other (downstream)" has been considered as not relevant.

**C6.7**

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**(C6.7) Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?**

Yes

**C6.7a**

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**(C6.7a) Provide the emissions from biologically sequestered carbon relevant to your organization in metric tons CO2.**

**Row 1**

**Emissions from biologically sequestered carbon (metric tons CO2)**

3252630

**Comment**

**C6.10**

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**(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.**

**Intensity figure**

0.00521

**Metric numerator (Gross global combined Scope 1 and 2 emissions)**

142977439

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

2746600000

**Scope 2 figure used**

Market-based

**% change from previous year**

9.8

**Direction of change**

Decreased

**Reason for change**

5.21 kg CO2/CHF revenue in 2018 vs 5.77 kg CO2/CHF revenue in 2017 - ongoing efforts in increasing thermal substitution rate, and in decreasing clinker factor and specific thermal energy consumption - divestments of plants with lower environmental performance

**C-CE6.11**

**(C-CE6.11) State your organization's Scope 1 and Scope 2 emissions intensities related to cement production activities.**

	Gross Scope 1 emissions intensity, metric tons CO2e per metric ton	Net Scope 1 emissions intensity, metric tons CO2e per metric ton	Scope 2, location-based emissions intensity, metric tons CO2e per metric ton
Clinker	0.832	0.799	0.055
Cement equivalent	0.637	0.612	0.042
Cementitious products	0.599	0.576	0.039
Low-CO2 materials	0.525	0.476	0.026

**C7. Emissions breakdowns**

**C7.1**

**(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?**

No

**C7.2**

**(C7.2) Break down your total gross global Scope 1 emissions by country/region.**

Country/Region	Scope 1 emissions (metric tons CO2e)
Africa and Middle East	22203187
Asia Pacific (or JAPA)	54468517
Europe	28614303
Latin America (LATAM)	13470155
North America	15835757

**C7.3**

**(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.**

By activity

**C7.3c**

**(C7.3c) Break down your total gross global Scope 1 emissions by business activity.**

Activity	Scope 1 emissions (metric tons CO2e)
Clinker and Cement	125925040
Aggregates	452595
Asphalt	214592
Captive Power Plants	7902810
Concrete Products	21370
Ready Mix Concrete	75512

**C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4**

**(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO2e.**

	Gross Scope 1 emissions, metric tons CO2e	Net Scope 1 emissions , metric tons CO2e	Comment
Cement production activities	125925040	121057822	
Chemicals production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Electric utility generation activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

**C7.5**

**(C7.5) Break down your total gross global Scope 2 emissions by country/region.**

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
Africa and Middle East	1777356	1694744	3129329	126508
Asia Pacific (or JAPA)	2755182	2890197	4217670	533841
Europe	1924212	1881389	5109686	686980
Latin America (LATAM)	729166	759965	2241546	621500
North America	1100586	1159218	2776484	289085

**C7.6**

**(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.**

By activity

**C7.6c**

**(C7.6c) Break down your total gross global Scope 2 emissions by business activity.**

Activity	Scope 2, location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
Clinker and Cement	7841245	7960538
Aggregates	287604	271525
Asphalt	25983	10698
Captive Power Plants	58490	55364
Concrete Products	15134	12559
Ready Mix Concrete	58046	74829

**C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7**

**(C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO2e.**

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Cement production activities	7841245	7960538	
Chemicals production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

**C7.9**

**(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?**

Decreased

**C7.9a**

**(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined) and for each of them specify how your emissions compare to the previous year.**

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	180467	Decreased	0.12	Renewable electricity production increased by 376,078 MWh from 2017 to 2018. To estimate the emissions saved, we multiply with the average CO2 intensity of electricity purchase in 2018 (which would have been the alternative) (376,078 MWh * 479.8 kg CO2/MWh = 180,467 t CO2). These savings represent 0.12% of our 2017 gross scope 1 + 2 emissions reported in the CDP 2018 ((180,467 t / 150,853,407 t)*100 = 0.12%). Please find our changes in emissions visualized consulting the following spreadsheet: <a href="https://docs.google.com/spreadsheets/d/1IUUhHIC3CQDIdoMoBzpgiYiQBrUFpy1RWHOWK6fLRtk/edit#gid=0">https://docs.google.com/spreadsheets/d/1IUUhHIC3CQDIdoMoBzpgiYiQBrUFpy1RWHOWK6fLRtk/edit#gid=0</a>
Other emissions reduction activities	1316453	Decreased	0.87	We reduced our Emissions by 1,316,453 t by improvements in the clinker factor, thermal substitution rate and specific thermal energy consumption. This translates into an emission decrease of 0.87% ( (1,316,453 t / 150,853,407 t)*100 = 0.87%) respective to the 2017 gross scope 1 + 2 emissions declared in the CDP 2018. Please find our changes in emissions visualized consulting the following spreadsheet: <a href="https://docs.google.com/spreadsheets/d/1IUUhHIC3CQDIdoMoBzpgiYiQBrUFpy1RWHOWK6fLRtk/edit#gid=0">https://docs.google.com/spreadsheets/d/1IUUhHIC3CQDIdoMoBzpgiYiQBrUFpy1RWHOWK6fLRtk/edit#gid=0</a>
Divestment	2993954	Decreased	1.98	The divestment of two chinese plants, Gongxian and Sancha, led to an emission reduction of 2,993,954 t, which is a reduction of 1.98% from the 2017 gross scope 1 + 2 emissions reported in the CDP 2018 ((2,993,954 t/150,853,407 t)*100 = 1.98%). Please find our changes in emissions visualized consulting the following spreadsheet: <a href="https://docs.google.com/spreadsheets/d/1IUUhHIC3CQDIdoMoBzpgiYiQBrUFpy1RWHOWK6fLRtk/edit#gid=0">https://docs.google.com/spreadsheets/d/1IUUhHIC3CQDIdoMoBzpgiYiQBrUFpy1RWHOWK6fLRtk/edit#gid=0</a>
Acquisitions	0	No change	0	
Mergers	0	No change	0	
Change in output	5091210	Increased	3.37	Due to the increased production in 2018, both gross scope 1 and 2 increased vs. 2017 (like for like). The production volume of cementitious material increased by 4.4% or 8,737,724 t. Multiplying the 2017 specific emission factor for the production with the production increase, the emission increased by 5,091,210 t. This translates into an emission change of 3.37 % compared to the 2017 Gross Scope 1+2 Emissions reported in the CDP 2018 ((5,091,210 t / 150,853,407 t)*100 = 3.37%). Please find our changes in emissions visualized consulting the following spreadsheet: <a href="https://docs.google.com/spreadsheets/d/1IUUhHIC3CQDIdoMoBzpgiYiQBrUFpy1RWHOWK6fLRtk/edit#gid=0">https://docs.google.com/spreadsheets/d/1IUUhHIC3CQDIdoMoBzpgiYiQBrUFpy1RWHOWK6fLRtk/edit#gid=0</a>
Change in methodology	0	No change	0	
Change in boundary	8324146	Decreased	5.52	To align with Group financial reporting, and in preparation for a transition to integrated reporting, we have changed our consolidation scope to include the entities covered in the Group consolidated financial statements. The list of principal consolidated companies is presented in note 2.4 of the LafargeHolcim Annual Report 2018. The Group consolidates a subsidiary if it has an interest of more than one half of the voting rights or is otherwise able to exercise control over the operations. The following entities, which were consolidated at 100 percent in the 2017 report, are excluded: LafargeHolcim companies in Morocco, Ivory Coast, Guinea, Cameroon, Benin, UAE, Oman and Qatar. Cement Australia, which was consolidated at 50 percent for environmental indicators and 100 percent for health and safety indicators, is excluded. These omitted emissions of 8,324,146 t represent a decrease of 5.52%, compared to our 2017 gross scope 1 + 2 emissions reported in the CDP 2018. ((8,324,146 t / 150,853,407 t)*100 = 5.52%) Please find our changes in emissions visualized consulting the following spreadsheet: <a href="https://docs.google.com/spreadsheets/d/1IUUhHIC3CQDIdoMoBzpgiYiQBrUFpy1RWHOWK6fLRtk/edit#gid=0">https://docs.google.com/spreadsheets/d/1IUUhHIC3CQDIdoMoBzpgiYiQBrUFpy1RWHOWK6fLRtk/edit#gid=0</a>
Change in physical operating conditions	0	No change	0	
Unidentified	0	No change	0	
Other	152165	Decreased	0.1	Due to inherent interdependencies between the different levers, the amount of 152,165 t was not allocated to any specific reason. However, we consider this error of 0.1% ((152,165 t / 150,853,407 t)*100= 0.10%) to be non material. Please find our changes in emissions visualized consulting the following spreadsheet: <a href="https://docs.google.com/spreadsheets/d/1IUUhHIC3CQDIdoMoBzpgiYiQBrUFpy1RWHOWK6fLRtk/edit#gid=0">https://docs.google.com/spreadsheets/d/1IUUhHIC3CQDIdoMoBzpgiYiQBrUFpy1RWHOWK6fLRtk/edit#gid=0</a>

**C7.9b**

**(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?**

Market-based

## C8. Energy

### C8.1

**(C8.1) What percentage of your total operational spend in the reporting year was on energy?**

More than 15% but less than or equal to 20%

### C8.2

**(C8.2) Select which energy-related activities your organization has undertaken.**

	Indicate whether your organization undertakes this energy-related activity
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

### C8.2a

**(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.**

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	9637264	168782213	178419478
Consumption of purchased or acquired electricity	<Not Applicable>	2257914	15216801	17474715
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	234568	<Not Applicable>	234568
Total energy consumption	<Not Applicable>	12129746	183999015	196128761

### C-CE8.2a

**(C-CE8.2a) Report your organization's energy consumption totals (excluding feedstocks) for cement production activities in MWh.**

	Heating value	Total MWh
Consumption of fuel (excluding feedstocks)	LHV (lower heating value)	151387062
Consumption of purchased or acquired electricity	<Not Applicable>	16395227
Consumption of other purchased or acquired energy (heat, steam and/or cooling)	<Not Applicable>	<Not Applicable>
Total energy consumption	<Not Applicable>	167782289

### C8.2b

**(C8.2b) Select the applications of your organization's consumption of fuel.**

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

### C8.2c

**(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.**

**Fuels (excluding feedstocks)**

Coal

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

59481995

**MWh fuel consumed for self-generation of electricity**

21543994

**MWh fuel consumed for self-generation of heat**

37938002

**MWh fuel consumed for self-generation of steam**

&lt;Not Applicable&gt;

**MWh fuel consumed for self-generation of cooling**

&lt;Not Applicable&gt;

**MWh fuel consumed for self-cogeneration or self-trigeneration**

&lt;Not Applicable&gt;

**Comment**

---

**Fuels (excluding feedstocks)**

Petroleum Coke

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

56661546

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

56661546

**MWh fuel consumed for self-generation of steam**

&lt;Not Applicable&gt;

**MWh fuel consumed for self-generation of cooling**

&lt;Not Applicable&gt;

**MWh fuel consumed for self-cogeneration or self-trigeneration**

&lt;Not Applicable&gt;

**Comment**

---

**Fuels (excluding feedstocks)**

Diesel

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

4914389

**MWh fuel consumed for self-generation of electricity**

739131

**MWh fuel consumed for self-generation of heat**

4175258

**MWh fuel consumed for self-generation of steam**

&lt;Not Applicable&gt;

**MWh fuel consumed for self-generation of cooling**

&lt;Not Applicable&gt;

**MWh fuel consumed for self-cogeneration or self-trigeneration**

&lt;Not Applicable&gt;

**Comment**

---

**Fuels (excluding feedstocks)**

Natural Gas

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

24520952

**MWh fuel consumed for self-generation of electricity**

1671586

**MWh fuel consumed for self-generation of heat**

22849366

**MWh fuel consumed for self-generation of steam**

<Not Applicable>

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

<Not Applicable>

**Comment**

---

**Fuels (excluding feedstocks)**

Oil Shale

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

1194

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

1194

**MWh fuel consumed for self-generation of steam**

<Not Applicable>

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

<Not Applicable>

**Comment**

---

**Fuels (excluding feedstocks)**

Lignite Coal

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

2254193

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

2254193

**MWh fuel consumed for self-generation of steam**

<Not Applicable>

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

<Not Applicable>

**Comment**

---

**Fuels (excluding feedstocks)**

Other, please specify (Heavy fuel)

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

3971503

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

3971503

**MWh fuel consumed for self-generation of steam**

<Not Applicable>

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

<Not Applicable>

**Comment**

---

**Fuels (excluding feedstocks)**

---

Other, please specify (Other traditional fuels)

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

255452

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

255452

**MWh fuel consumed for self-generation of steam**

<Not Applicable>

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

<Not Applicable>

**Comment**

---

**Fuels (excluding feedstocks)**

Other, please specify (Alternative kiln fuels excluding Biomass)

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

16720988

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

16720988

**MWh fuel consumed for self-generation of steam**

<Not Applicable>

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

<Not Applicable>

**Comment**

---

**Fuels (excluding feedstocks)**

Other, please specify (Biomass fuels)

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

9637264

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

9637264

**MWh fuel consumed for self-generation of steam**

<Not Applicable>

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

<Not Applicable>

**Comment**

---

**C-CE8.2c**

---

(C-CE8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel for cement production activities.

**Fuels (excluding feedstocks)**

Coal

**Heating value**

LHV

---

**Total MWh fuel consumed for cement production activities**

37938002

**MWh fuel consumed at the kiln**

37329072

**MWh fuel consumed for the generation of heat that is not used in the kiln**

608930

**MWh fuel consumed for the self-generation of electricity**

0

**MWh fuel consumed for self-cogeneration or self-trigeneration**

<Not Applicable>

---

**Fuels (excluding feedstocks)**

Petroleum Coke

**Heating value**

LHV

**Total MWh fuel consumed for cement production activities**

56661546

**MWh fuel consumed at the kiln**

56661546

**MWh fuel consumed for the generation of heat that is not used in the kiln**

0

**MWh fuel consumed for the self-generation of electricity**

0

**MWh fuel consumed for self-cogeneration or self-trigeneration**

<Not Applicable>

---

**Fuels (excluding feedstocks)**

Diesel

**Heating value**

LHV

**Total MWh fuel consumed for cement production activities**

1976250

**MWh fuel consumed at the kiln**

568418

**MWh fuel consumed for the generation of heat that is not used in the kiln**

1407832

**MWh fuel consumed for the self-generation of electricity**

0

**MWh fuel consumed for self-cogeneration or self-trigeneration**

<Not Applicable>

---

**Fuels (excluding feedstocks)**

Natural Gas

**Heating value**

LHV

**Total MWh fuel consumed for cement production activities**

21970669

**MWh fuel consumed at the kiln**

20853717

**MWh fuel consumed for the generation of heat that is not used in the kiln**

1116952

**MWh fuel consumed for the self-generation of electricity**

0

**MWh fuel consumed for self-cogeneration or self-trigeneration**

<Not Applicable>

---

**Fuels (excluding feedstocks)**

Oil Shale

**Heating value**

LHV

**Total MWh fuel consumed for cement production activities**

1194

**MWh fuel consumed at the kiln**

1194

---

**MWh fuel consumed for the generation of heat that is not used in the kiln**

0

**MWh fuel consumed for the self-generation of electricity**

0

**MWh fuel consumed for self-cogeneration or self-trigeneration**

<Not Applicable>

---

**Fuels (excluding feedstocks)**

Lignite Coal

**Heating value**

LHV

**Total MWh fuel consumed for cement production activities**

2254193

**MWh fuel consumed at the kiln**

2254193

**MWh fuel consumed for the generation of heat that is not used in the kiln**

0

**MWh fuel consumed for the self-generation of electricity**

0

**MWh fuel consumed for self-cogeneration or self-trigeneration**

<Not Applicable>

---

**Fuels (excluding feedstocks)**

Other, please specify (Heavy Fuel)

**Heating value**

LHV

**Total MWh fuel consumed for cement production activities**

3971503

**MWh fuel consumed at the kiln**

3971503

**MWh fuel consumed for the generation of heat that is not used in the kiln**

0

**MWh fuel consumed for the self-generation of electricity**

0

**MWh fuel consumed for self-cogeneration or self-trigeneration**

<Not Applicable>

---

**Fuels (excluding feedstocks)**

Other, please specify (Other traditional fuels)

**Heating value**

LHV

**Total MWh fuel consumed for cement production activities**

255452

**MWh fuel consumed at the kiln**

0

**MWh fuel consumed for the generation of heat that is not used in the kiln**

255452

**MWh fuel consumed for the self-generation of electricity**

0

**MWh fuel consumed for self-cogeneration or self-trigeneration**

<Not Applicable>

---

**Fuels (excluding feedstocks)**

Other, please specify (Alternative Kiln fuels without Biomass)

**Heating value**

LHV

**Total MWh fuel consumed for cement production activities**

16720988

**MWh fuel consumed at the kiln**

16720988

**MWh fuel consumed for the generation of heat that is not used in the kiln**

0

**MWh fuel consumed for the self-generation of electricity**

0

---

**MWh fuel consumed for self-cogeneration or self-trigeneration**

<Not Applicable>

**Fuels (excluding feedstocks)**

Other, please specify (Biomass fuels)

**Heating value**

LHV

**Total MWh fuel consumed for cement production activities**

9637264

**MWh fuel consumed at the kiln**

9637264

**MWh fuel consumed for the generation of heat that is not used in the kiln**

0

**MWh fuel consumed for the self-generation of electricity**

0

**MWh fuel consumed for self-cogeneration or self-trigeneration**

<Not Applicable>

**C8.2d****(C8.2d) List the average emission factors of the fuels reported in C8.2c.****Coal****Emission factor**

96

**Unit**

kg CO2 per GJ

**Emission factor source**

CO2 Accounting and Reporting Standard for the Cement Industry WBCSD-CSI: Default CO2 Emission Factors for Fuels, Version 3.1

**Comment**

Default CO2 emissions factors from the CO2 Accounting and Reporting Standard for the Cement Industry WBCSD-CSI have been provided. For internal accounting, these are replaced with specific plant values when available.

**Diesel****Emission factor**

74.1

**Unit**

kg CO2 per GJ

**Emission factor source**

CO2 Accounting and Reporting Standard for the Cement Industry WBCSD-CSI: Default CO2 Emission Factors for Fuels, Version 3.1

**Comment**

Default CO2 emissions factors from the CO2 Accounting and Reporting Standard for the Cement Industry WBCSD-CSI have been provided. For internal accounting, these are replaced with specific plant values when available.

**Lignite Coal****Emission factor**

101

**Unit**

kg CO2 per GJ

**Emission factor source**

CO2 Accounting and Reporting Standard for the Cement Industry WBCSD-CSI: Default CO2 Emission Factors for Fuels, Version 3.1

**Comment**

Default CO2 emissions factors from the CO2 Accounting and Reporting Standard for the Cement Industry WBCSD-CSI have been provided. For internal accounting, these are replaced with specific plant values when available.

**Natural Gas****Emission factor**

56.1

**Unit**

kg CO2 per GJ

**Emission factor source**

CO2 Accounting and Reporting Standard for the Cement Industry WBCSD-CSI: Default CO2 Emission Factors for Fuels, Version 3.1

**Comment**

Default CO2 emissions factors from the CO2 Accounting and Reporting Standard for the Cement Industry WBCSD-CSI have been provided. For internal accounting, these are replaced with specific plant values when available.

## Oil Shale

**Emission factor**  
107

**Unit**  
kg CO2 per GJ

**Emission factor source**  
CO2 Accounting and Reporting Standard for the Cement Industry WBCSD-CSI: Default CO2 Emission Factors for Fuels, Version 3.1

**Comment**  
Default CO2 emissions factors from the CO2 Accounting and Reporting Standard for the Cement Industry WBCSD-CSI have been provided. For internal accounting, these are replaced with specific plant values when available.

## Petroleum Coke

**Emission factor**  
92.8

**Unit**  
kg CO2 per GJ

**Emission factor source**  
CO2 Accounting and Reporting Standard for the Cement Industry WBCSD-CSI: Default CO2 Emission Factors for Fuels, Version 3.1

**Comment**  
Default CO2 emissions factors from the CO2 Accounting and Reporting Standard for the Cement Industry WBCSD-CSI have been provided. For internal accounting, these are replaced with specific plant values when available.

## Other

**Emission factor**  
80.9

**Unit**  
kg CO2 per GJ

**Emission factor source**  
The emission factor provided above is our actual alternative fossil fuels (without biomass) emission factor, which is calculated using the default emission factors listed below or fuel specific emission factors reported by our plants. waste oil: 74 tyres: 85 plastics: 75 solvents: 74 impregnated saw dust: 75 mixed industrial waste: 83 other fossil based wastes: 80 CO2 Accounting and Reporting Standard for the Cement Industry WBCSD-CSI: Default CO2 Emission Factors for Fuels, Version 3.1

**Comment**  
Default CO2 emissions factors from the CO2 Accounting and Reporting Standard for the Cement Industry WBCSD-CSI have been provided. For internal accounting, these are replaced with specific plant values when available.

## C8.2e

**(C8.2e) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.**

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	5137317	4612933	324593	324318
Heat	244129	234568	244129	234568
Steam	0	0	0	0
Cooling	0	0	0	0

## C-CE8.2e

**(C-CE8.2e) Provide details on the electricity and heat your organization has generated and consumed for cement production activities.**

	Total gross generation (MWh) inside the cement sector boundary	Generation that is consumed (MWh) inside the cement sector boundary
Electricity	5032853	4508469
Heat	244129	234568
Steam	0	0

## C8.2f

**(C8.2f) Provide details on the electricity, heat, steam and/or cooling amounts that were accounted for at a low-carbon emission factor in the market-based Scope 2 figure reported in C6.3.**

**Basis for applying a low-carbon emission factor**

Grid mix of renewable electricity

**Low-carbon technology type**

Solar PV  
Wind  
Hydropower  
Nuclear  
Biomass (including biogas)

**Region of consumption of low-carbon electricity, heat, steam or cooling**

Other, please specify (Group level)

**MWh consumed associated with low-carbon electricity, heat, steam or cooling**

2257914

**Emission factor (in units of metric tons CO2e per MWh)**

0

**Comment**

Contract with suppliers or utilities, with a supplier-specific emission rate, not backed by electricity attribute certificates.

**C9. Additional metrics**

**C9.1**

**(C9.1) Provide any additional climate-related metrics relevant to your business.**

**C-CE9.6**

**(C-CE9.6) Disclose your organization's low-carbon investments for cement production activities.**

**Investment start date**

January 1 2017

**Investment end date**

December 31 2020

**Investment area**

R&D

**Technology area**

Carbon capture and storage (CCS)

**Investment maturity**

Large scale commercial deployment

**Investment figure**

100000000

**Low-carbon investment percentage**

0 - 20%

**Please explain**

Based on research conducted by the European Cement Research Academy (ECRA), oxyfuel technology will now be implemented in Retznei in Austria to test for the first time how the cement production process can be adapted to accommodate this innovative carbon capture technology. Note 1: Investment figure: Aprox. 100 Mio CHF Note 2: Successful demonstration expected in 2020

**C10. Verification**

**C10.1**

**(C10.1) Indicate the verification/assurance status that applies to your reported emissions.**

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

## C10.1a

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**(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 and/or Scope 2 emissions and attach the relevant statements.**

**Scope**

Scope 1

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

14052019\_publications\_lafargeholcim-sustainability-report-2018.pdf

**Page/ section reference**

14052019\_publications\_lafargeholcim-sustainability-report-2018.pdf Pages 23, 65, 71 and 72 Note: Independent assurance statement by Deloitte LLP was given to LafargeHolcim on the full content of the 2018 Sustainability Report for the year ended 31 December 2018

**Relevant standard**

ISAE3000

**Proportion of reported emissions verified (%)**

100

---

**Scope**

Scope 2 market-based

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

14052019\_publications\_lafargeholcim-sustainability-report-2018.pdf

**Page/ section reference**

14052019\_publications\_lafargeholcim-sustainability-report-2018.pdf Pages 23, 65, 71 and 72 Note: Independent assurance statement by Deloitte LLP was given to LafargeHolcim on the full content of the 2018 Sustainability Report for the year ended 31 December 2018

**Relevant standard**

ISAE3000

**Proportion of reported emissions verified (%)**

100

---

## C10.1b

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**(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.**

**Scope**

Scope 3- all relevant categories

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Attach the statement**

14052019\_publications\_lafargeholcim-sustainability-report-2018.pdf

**Page/section reference**

14052019\_publications\_lafargeholcim-sustainability-report-2018.pdf Pages 23, 71 and 72 Note: Independent assurance statement by Deloitte LLP was given to LafargeHolcim on the full content of the 2018 Sustainability Report for the year ended 31 December 2018

**Relevant standard**

ISAE3000

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## C10.2

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(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C8. Energy	Other, please specify (Energy Consumption GJ / Years)	ISAE3000	All energy sources, including traditional fuels, alternative fuels, biomass, and electricity are assessed and verified by type. Reference is available in: 14052019_publications_lafargeholcim-sustainability-report-2018.pdf Pages 65, 71 and 72 Note: Independent assurance statement by Deloitte LLP was given to LafargeHolcim on the full content of the 2018 Sustainability Report for the year ended 31 December 2018

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

Yes

C11.1a

(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.

- Alberta SGER
- BC carbon tax
- Colombia carbon tax
- EU ETS
- Mexico carbon tax
- Québec CaT
- Switzerland carbon tax
- Switzerland ETS

C11.1b

(C11.1b) Complete the following table for each of the emissions trading systems in which you participate.

Alberta SGER

**% of Scope 1 emissions covered by the ETS**

0.88

**Period start date**

January 1 2018

**Period end date**

December 31 2018

**Allowances allocated**

75030

**Allowances purchased**

0

**Verified emissions in metric tons CO<sub>2</sub>e**

1179019

**Details of ownership**

Facilities we own and operate

**Comment**

**EU ETS****% of Scope 1 emissions covered by the ETS**

15.45

**Period start date**

January 1 2018

**Period end date**

December 31 2018

**Allowances allocated**

19703454

**Allowances purchased**

0

**Verified emissions in metric tons CO2e**

20783185

**Details of ownership**

Facilities we own and operate

**Comment****Québec CaT****% of Scope 1 emissions covered by the ETS**

0.49

**Period start date**

January 1 2018

**Period end date**

December 31 2018

**Allowances allocated**

663472

**Allowances purchased**

0

**Verified emissions in metric tons CO2e**

653402

**Details of ownership**

Facilities we own and operate

**Comment**

Quebec (St. Constant Plant)

**Switzerland ETS****% of Scope 1 emissions covered by the ETS**

0.99

**Period start date**

January 1 2018

**Period end date**

December 31 2018

**Allowances allocated**

1575056

**Allowances purchased**

0

**Verified emissions in metric tons CO2e**

1336410

**Details of ownership**

Facilities we own and operate

**Comment****C11.1c**

---

(C11.1c) Complete the following table for each of the tax systems in which you participate.

**BC carbon tax**

**Period start date**

January 1 2018

**Period end date**

December 31 2018

**% of emissions covered by tax**

0.49

**Total cost of tax paid**

5158421

**Comment**

**Colombia carbon tax**

**Period start date**

January 1 2018

**Period end date**

December 31 2018

**% of emissions covered by tax**

0.01

**Total cost of tax paid**

58697

**Comment**

**Mexico carbon tax**

**Period start date**

January 1 2018

**Period end date**

December 31 2018

**% of emissions covered by tax**

0.25

**Total cost of tax paid**

332317

**Comment**

**Switzerland carbon tax**

**Period start date**

January 1 2018

**Period end date**

December 31 2018

**% of emissions covered by tax**

0.24

**Total cost of tax paid**

31016176

**Comment**

Holcim Switzerland paid and reclaimed total 31'016'176 CHF in 2018 related to purchased brown coal, oil as fuel. CHE received 100% of the tax back and net P&L impact was zero. The CO2 tax on fossil fuels is set at 96 CHF/t and calculated on the CO2 emissions factor of the specific fuel.

**C11.1d**

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**(C11.1d) What is your strategy for complying with the systems in which you participate or anticipate participating?**

**i) A description of your strategy for complying with the systems in which you participate**

LafargeHolcim CO2 ambition, targets and aspirations for 2022 and 2030, have been cascaded across all business units by the integration in the business management plan of the respective levers.

At the moment, the levers we are currently employing to reduce carbon intensity are focused to reduced our scope 1 and 2 emissions related to process, fuel emissions and energy purchased mainly, being fully aligned with the nature of the carbon systems in under which we currently operate.

- **Clinker substitution:** Substitution of clinker with mineral components such as limestone, pozzolan, slag or fly ash. Currently, the products we market use on average 28 percent of constituents to replace clinker.
- **Waste-derived fuels and biomass:** To be used as replacement for fossil fuels that provide the energy needed to operate a cement kiln. We are currently able to source 18 percent of our energy needs from low-carbon fuels and biomass.
- **Increased energy efficiency:** We are optimizing our low-carbon power-producing assets across our production plant portfolio. We are also investing in or purchasing renewable power when it is economically advantageous and investigating opportunities to generate renewable energy by using our land for windmills or solar panel farms, or using quarries as water reservoirs for hydropower.
- **Innovation:** We are continually exploring new strategies and technologies, such as carbon capture and usage and developing new low-carbon solutions.
- **Risk and opportunities:** Monitoring and modeling of distinct and plausible carbon scenarios are used to increase the robustness of our strategy.
- **Transparency:** The Group supports transparency and improved disclosure in carbon-related performance and risks.

**ii) A description of your strategy for complying with the system in which you anticipate to participate in, and identification of when you anticipate being regulated in the next 3 years**

**iii) An example of how you have applied your strategy**

In our Brookfield Cement, in Nova Scotia, Canada a Cap & Trade program similar in design to the Quebec system has been recently put into place with 2019 being the first year Free Allowances would be provided. For the last years, the country Public Affairs managers and Sustainability colleagues have been closely monitoring and modeling what would be the impact on our plant and determining the levers to ensure a smooth transition. In the country, innovative solutions such as carbon technologies are being piloted in other regions which are currently under an existing system. Key learnings are expected to be replicated throughout the cement division.

In Europe, with a three years time-horizon, we are managing closely the transition to the phase 4 of the new European Trading System which will come into force in 2021, bringing more strict CO2 free credit allocation systems and the likely increase of fossil fuels' costs and scarcity of alternative mineral components. LafargeHolcim has already implemented a dedicated regional-wide decarbonization roadmap. The initiative has been distributed in four key areas, aligned with our global strategy:

- Energy efficiency improvements and acceleration of Alternative Fuel usage
- Enhanced product portfolio optimization to accelerate the production of low carbon binders
- Network optimization to evaluate production thresholds and network optimization synergies
- Innovation of CO2 neutral technologies such as carbon capture and storage

**C11.2**

**(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?**

No

**C11.3**

**(C11.3) Does your organization use an internal price on carbon?**

Yes

**C11.3a**

**(C11.3a) Provide details of how your organization uses an internal price on carbon.**

**Objective for implementing an internal carbon price**

Navigate GHG regulations  
Stakeholder expectations  
Change internal behavior  
Drive energy efficiency  
Drive low-carbon investment  
Stress test investments  
Identify and seize low-carbon opportunities

**GHG Scope**

Scope 1  
Scope 2  
Scope 3

**Application**

LafargeHolcim promotes the use of the Integrated (Economic, Social and Environmental) Profit and Loss Statement (IPL) methodology as a fundamental tool to assess the initiatives proposed (future investments) to achieve the company's sustainability ambition. This methodology quantifies the equivalent economic value on the social and environmental externalities related to the company's new projects, to raise awareness of how they may or may not affect LafargeHolcim's business, and to assess their relative importance in the decision making process. In this process a list of initiatives are proposed to achieve defined targets. A Social and Environmental PL assessment can be conducted for each of the initiatives, considering a price for carbon and other externalities.

**Actual price(s) used (Currency /metric ton)**

32

**Variance of price(s) used**

We based our figure on a combination of reports, including the Stern report (assuming 25 USD/t in 2007), analysis made by the Environmental Protection Agency (taking the midpoint of 3 percent and 5 percent discount rates in 2018: 26 USD/t), combined with prevalent assumptions used by governments that internalize the cost of CO2. Notably, for the purposes of comparison, we considered that, in its impact assessment of the Emission Trading Directive, the European Commission assumed a range of prices between [ 30 CHF and 50 CHF].

**Type of internal carbon price**

Shadow price

**Impact & implication**

Specific description of how organization uses internal price on carbon According to the existing carbon pricing schemes, LafargeHolcim uses an internal price of carbon to estimate the economic impact on the production cost of the sites that are under the defined mechanisms in each country or region. Regarding the efficiency of each production site and the existing and projected market demand, LafargeHolcim makes decisions based on the overall financial impact that the asset has and may have in the future. Based on the obtained results roadmaps are defined to achieve the goals of our sustainability ambition, giving priority to those initiatives (new products, investments or R&D activities) that matched in high integrated P&L value, high feasibility and high estimated net present value. In addition, LafargeHolcim promotes the use of the Integrated (Economic, Social and Environmental) Profit and Loss Statement (IPL) methodology as a fundamental piece of information in its mainstream reports. The LafargeHolcim IPL assumptions are made publicly available:

[https://www.lafargeholcim.com/sites/lafargeholcim.com/files/atoms/files/ipl\\_results\\_and\\_assumptions\\_2018\\_1.pdf](https://www.lafargeholcim.com/sites/lafargeholcim.com/files/atoms/files/ipl_results_and_assumptions_2018_1.pdf)

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**C12. Engagement**

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**C12.1**

**(C12.1) Do you engage with your value chain on climate-related issues?**

Yes, our suppliers  
Yes, our customers  
Yes, other partners in the value chain

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**C12.1a**

**(C12.1a) Provide details of your climate-related supplier engagement strategy.**

**Type of engagement**

Innovation & collaboration (changing markets)

**Details of engagement**

Run a campaign to encourage innovation to reduce climate impacts on products and services

*Partnership projects to incetive innovation, CO2 reduction and Circular Economy - e.g: refractory bricks (magnesia)*

**% of suppliers by number**

34

**% total procurement spend (direct and indirect)**

55

**% Scope 3 emissions as reported in C6.5**

79

**Rationale for the coverage of your engagement**

i: Rationale ii: Scope of our engagement There are 2 types of engagement process we undertake at LafargeHolcim with regards to suppliers: 1) Sustainable Procurement i) At LafargeHolcim, supplier sustainability compliance is an integral part of any sourcing decision. Our approach includes how we work with our suppliers, deploying responsible sourcing practices in our supply chain. As part of our supplier code of business conduct, we expect from all our suppliers to systematically manage their environmental impacts with regards, but not limited to: climate, energy, water, waste, chemicals, air pollution and biodiversity and set objectives and targets to reduce such impacts. ii) Our Sustainable Procurement model, ensures engagement with suppliers through supplier pre-qualification. We engage with suppliers to ensure a robust prioritization methodology and risk materiality review. Some of steps taken: qualification and ongoing evaluation process, risk mitigation and consequence management, environmental and climate performance evaluation. Countries identify and prioritize suppliers that pose a higher ESG impact. Those suppliers, together with all new suppliers, are evaluated by an independent third party appropriately to the perceived risk. Positive engagement action plans are then created to address shortfalls which may to collaboration partnerships where suitable. 2) Innovation and Collaboration i) At LafargeHolcim we aim to establish partnership projects with our suppliers to incentivize innovation, especially about CO2 reduction and Circular Economy. We believe these collaboration on innovation projects could help to reduce costs, to achieve our CO2 and Circular Economy commitments and to strengthen our sustainable procurement standards. ii) These partnership projects are mainly limited to Global but high ESG impact suppliers. A recent example is our partnership with a supplier of magnesia, to re-use bricks that are replaced from our kilns as raw material to produce new bricks. The project requires to develop a reverse logistics process to collect the bricks from our sites and a new process at the supplier site to pre-process the old contaminated bricks before using them as raw material. This project will help to the optimization of natural resources and the reduction of carbon intensity in the value chain from the production process.

**Impact of engagement, including measures of success**

i) Company specific description of the impact of climate-related supplier engagement ii) Description of measures of success The impact of engagement for our two types of engagement with suppliers are: 1) Sustainable Procurement Initiative i) Group companies report annually on their supplier assessments in the annual procurement scorecard. A total of 17'176 high ESG impact suppliers and contractors were assessed for environmental criteria in the LafargeHolcim Sustainable Procurement initiative by 2018. These suppliers and contractors (screened on environmental criteria) accounted for 55% of total spend, which is considered significant. Suppliers identified as having a high environmental impact shall take action and demonstrate proof of continuous improvement towards having a recognized Environmental Management System in place. Please note that these figures refer to suppliers and contractors that were assessed for compliance. The Supplier code of conduct, however applies to all suppliers and contractors. ii) We measure our success in terms of coverage of qualified suppliers in % of high ESG impact suppliers. This is the first step of our sustainable procurement journey but still illustrate the impact of our effort, covering a big supplier base across the world and with different ESG challenges. By 2022, we target to have 100% of high ESG impact suppliers assessed with consequence management in place. <http://www.lafargeholcim.com/sites/lafargeholcim.com/files/atoms/files/lafargeholcimbusinessconductforsupplier.pdf> 2) Innovation and Collaboration Projects i) The positive impact is not only the optimization of natural resources (shortage of magnesia due to stronger regulations), but also a reduction on CO2 in the order of 15% in the bricks production phase (normal process emit 2 CO2 tons per 1 tonne of material produced). ii) We measure our success in terms of % reduction of CO2 emissions per tonne of material produced and reduction of the volume of magnesia used per ton of material produced. Note: For Scope 3, the categories taken into account are: Purchased goods + Fuel + Transportation Downstream and Upstream.

**Comment**

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**C12.1b**

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### (C12.1b) Give details of your climate-related engagement strategy with your customers.

#### Type of engagement

Collaboration & innovation

#### Details of engagement

Run a campaign to encourage innovation to reduce climate change impacts

#### % of customers by number

100

#### % Scope 3 emissions as reported in C6.5

0

#### Please explain the rationale for selecting this group of customers and scope of engagement

i) Rationale for selecting this group of customers and scope of engagement Rationale LafargeHolcim has an important range of products and brands which can be considered as low carbon products. We engage with our customers in promoting sustainable solutions including solutions specifically geared towards low carbon construction materials and saving carbon emissions over the construction life cycle. In addition, the LafargeHolcim Foundation for Sustainable Construction promotes and encourages the development and design of a sustainable built environment. It is a key lever for LafargeHolcim to collaborate with key customers, incentivizing relevant innovations in an early stage. Scope of engagement The scope of engagement relates to three main actions: Promotion of our low carbon products: Information available in respective country websites, where we promote our low carbon products, and where customers can gather detailed information about the applications and benefits of our low-carbon product portfolio. Collaboration: LafargeHolcim Group Sustainability is engaging with the entire construction value chain including real estate developers and construction companies through its standing stakeholders panel (last meeting in July 2019). Furthermore, dedicated workshop meetings with contractors and construction companies on low carbon construction materials are taking place (so far five meetings in 2019). Incentivisation: LafargeHolcim Foundation for Sustainable Construction runs a 3-year competition with USD 2 million prize money to promote sustainable approaches to creating the built environment with an active focus on reducing CO2 emissions at every stage of a structure's use cycle. The LafargeHolcim Awards are material neutral and the world's most significant competition for sustainable design.

#### Impact of engagement, including measures of success

ii) specific description of the impact of climate-related engagement strategy with your customers; iii) clear description of measures of success Promotion: On the promotion of low carbon products, we have experienced a yearly growth in revenues from low carbon products from about 3% in 2015, to about 8 % in 2018. We expect this trend to prevail over the next year as we continue to invest in further developing and deploying our low-carbon products portfolio to face the increasing demand. Measure of success: % of Group revenues from low carbon products. Collaboration: The number of dedicated workshop meetings with contractors and construction companies on low carbon construction materials has gone up to 5 meetings in 2019 (vs 3 in 2018). We aim to reach a level of 7 meetings per year in 2019 / 2020. Measure of success: Number of workshop meetings with contractors on low carbon material topics / year. Incentivisation: Since its inception in 2003, the LafargeHolcim Foundation for Sustainable Construction has stimulated a professional and targeted dialogue among building practitioners, academia and public authorities, leading to setting performance indicators, benchmarks and best practice examples for low carbon construction in specific and sustainable construction in general. The main programs of the Foundation within its three-year cycle of activities are: - The international Awards competitions for Sustainable Construction (see above) - The international Forums for Sustainable Construction (6th Forum held in 2019 in Egypt dedicated to "Re-Materialization Construction") - Dedicated publications on low carbon design and construction, e.g. on prize winning projects or in collaboration with L'Architecture d'Aujourd'hui Measure of success: Number of entries to the international Awards competitions for Sustainable Construction, feedback from Forums for Sustainable Construction's participants, number of dedicated publications on low carbon design and construction related to the foundation.

## C12.1c

### (C12.1c) Give details of your climate-related engagement strategy with other partners in the value chain.

i) A company specific description of your climate-related engagement strategy with other partners in the value chain

LafargeHolcim is a founder member and the Vice-Chair of the Concrete Sustainability Council (CSC). The system is designed to provide transparency on the climate, environmental, social and economic responsibility of concrete, cement and aggregate companies' operations and their supply chains. By creating a certification system for responsibly sourced concrete, the CSC aims to improve the transparency of the concrete sector, highlight the essential role of concrete in creating a sustainable construction sector by getting recognition in 'green' procurement government policies and building rating systems. The CSC certification system consists of an operational manual and assessment criteria with guidance on their application. This criteria includes climate related measures such as energy consumption and CO2 intensity. A typical certification process is applicable to all sizes of concrete companies, and currently comprises of three levels: bronze, silver and gold. Aggregate and cement suppliers can achieve a CSC supplier certificate to support their concrete clients with their CSC assessments.

ii) A clear explanation of who 'other partners in the value chain' constitutes

The CSC certification system has been developed together with a large group of the industry as well as certification institutes (i.e: HeidelbergCement, Cemex, CRH, IUCN, WWF). IUCN convened a consultation process with environmental experts and representatives from civil society focused on providing feedback on the system's environmental and social criteria. The revised technical manual addresses some of the feedback received and aims for continuous improvement. In this respect, CSC will continue the dialogue with civil society organizations and other stakeholders.

iii) A case study/example of your climate-related engagement strategy with other partners in the value chain

As one of the first companies globally, LafargeHolcim has adopted the CSC system to its operations.

In Germany, the company holds 14 CSC Gold Certificates for Concrete operations, 7 CSC Silver Certificates for Aggregates (highest possible score) and another 8 CSC Silver Certificates for Cement (highest possible score). With this, LafargeHolcim is GLOBALLY THE FIRST company to hold CSC Certificates covering the entire concrete value chain of Cement, Concrete and Aggregates.

## C12.3

**(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?**

- Direct engagement with policy makers
- Trade associations
- Funding research organizations

**C12.3a**

**(C12.3a) On what issues have you been engaging directly with policy makers?**

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Cap and trade	Support	Advocacy activities for the definition and implementation of effective regulations to mitigate climate change in EU, Switzerland, Canada and California. These activities range from contributing to the political debate at public fora, to providing technical advice and data directly to policy makers as well as taking an active role in expert working groups of associations. Our support for Cap and Trade is articulated in our positions available in the public domain at : <a href="https://www.lafargeholcim.com/sustainability-reports">https://www.lafargeholcim.com/sustainability-reports</a>	We support a legally-binding, international agreement to mitigate and adapt to climate change. We advocate for a successful agreement, fulfilling following principles: a) The introduction of carbon pricing, incentivizing emission reduction. b) Contributions from nations and regions which lead to comparable and coordinated efforts, establishing a level-playing field between all local producers and importers. c) The provision of a long-term, stable and reliable regulatory environment to encourage investments, support plans to reduce CO2 emissions further, and adapt to climate change. d) A reliable monitoring, reporting and verification system to follow up on nations' contributions.
Energy efficiency	Support	As supporters of the Paris Agreement, LafargeHolcim is one of the main founding parties of the Global Alliance for Building and Construction (Global ABC). Under the lead of the Global ABC, we are one co-chair of the Working Group 5, 'Market Transformation'. The Working group is targeting at key levers to reduce life cycle carbon emissions along the construction value chain, facilitating a fact and data based alignment among the different value chain players on individual targets, performance indicators and measurements. Energy efficiency is a primary key lever in this context.	The Global ABC is setting the scene for political frameworks, guidelines and incentives with the following priorities: a) Building codes and norms focusing on buildings' carbon & energy performance, rather than use of specific materials, would facilitate more potential for innovation and, therefore, lead to greater reductions in CO2 emissions. b) Sustainable construction criteria should be included in public procurement and rewarded in the terms of reference for new buildings and construction works in the public sector. c) Sustainable construction standards and green building codes should be adopted for public investments
Mandatory carbon reporting	Support	LafargeHolcim has contributed actively to the definition of a standard for sectoral emission reporting. As a leading business committed to ensuring transparency and action around climate-related risks and opportunities, we support the voluntary recommendations of the Financial Stability Board TCFD. The identification, assessment and effective management of climate-related risks and opportunities are fully embedded in our risk management process, and subject to continuous improvement.	WBCSD-GCCA protocols should be recognized and adopted widely, so as to make sure that one tonne of carbon is measured consistently everywhere and that benchmarking carbon efficiency is possible.
Adaptation or resilience	Support	LafargeHolcim participates in 'The Concrete Initiative' that promotes the benefits of concrete as a building material: concrete can withstand major shocks, absorb sound, and regulate temperatures. The high level of thermal mass in concrete constructions means that indoor temperatures remain stable irrespective of external fluctuations. This sharply reduces the need for extra heating or cooling (as well as providing greater comfort). Concrete buildings can have a minimum service life of 50 years, but may remain serviceable for hundreds of years, if properly maintained. The durability and resilience of concrete makes it ideal for constructing buildings that demand high safety levels. For example, nuclear power plants and hydroelectric dams are constructed almost entirely of concrete. It has properties that will be mandatory as national building codes are revised to address extreme weather linked to climate change, such as rising sea levels and storms. Further information about The Concrete Initiative is available on its website: <a href="http://www.theconcreteinitiative.eu">www.theconcreteinitiative.eu</a> . We maintain permanent advocacy through position papers, in conferences, as member of working groups, and as member of national and/or European trade associations.	Regarding society issues, The Concrete Initiative calls for involvement of the concrete sector in the ongoing reflection linked to the sustainable development of cities (e.g. by including sustainable construction in the Smart Cities and Communities Initiative), and for a regulatory framework that incentivises and redirects sufficient financial flows to boost sustainable construction practices for transport and urban infrastructure. On the economic front, The Concrete Initiative advocates for EU industrial policies and standards that look at the performance of buildings or infrastructure projects and do not favour one material over another. It also calls for further development of the Green Public Procurement Guidelines with criteria that include whole-life performance and durability. To successfully address greenhouse gas emissions in cities, we must not only find methods to reduce buildings' energy consumption, but also find ways to successfully implement new technologies. To make this happen, we need stronger cooperation between the public and private sectors. We therefore need the following from the public sector: a) a stable policy environment with known frameworks and targets that are not constantly evolving, b) the right targets and objectives: they must be set to facilitate implementation of energy efficient designs. This requires good measurement systems optimizing the whole building system rather than focusing on sub-systems or components individually, c) The right incentives - there is little incentive to build energy efficient buildings if the energy savings, improved comfort and desirability of the building do not translate into an economic return on investment, d) Building up to innovation - prescriptive building specifications need to give way to performance specifications which will allow innovation to flourish.
Climate finance	Support	We promote economic policy to incentivize the R&D necessary to achieve a carbon neutral construction sector. Since 2015 LafargeHolcim took part in many initiatives linked to the TCFD, and subsequently the development of the Sustainable Finance initiative at EU level. LafargeHolcim is a member of the EU's Technical Expert Group on taxonomy and provides specialist advice linked to the definition of metrics and thresholds linked to cement manufacturing. LafargeHolcim fully support the use of taxonomy in a way to incentives and enables the transition towards low-carbon construction and low carbon manufacturing.	With regards to EU taxonomy, which forms the heart of the Eu sustainable finance initiative, the position put forward by LafargeHolcim with regards to cement manufacturing is as follows: i) The manufacture of cement (NACE C23.5.1) is currently being considered for inclusion of the EU taxonomy in relation to the sustainable finance package. The metrics and thresholds associated with it should be directly related to the activity itself and thus be based on cement rather than intermediary products (i.e. clinker in this case). ii) Most international cement companies are expressing their CO2 ambitions, targets and performance in terms of net specific emissions or kg CO2/t cementitious materials. This forms the most widely used and reported metric to define CO2-related targets and to report performances. This is also the metric used in the recent IEA roadmap "Technology Roadmap – Low Carbon Transition in the Cement Industry" for different time horizons (2030, 2040 and 2050 and according to a 2 degree scenario). iii) The use of the EU ETS benchmark, expressed in CO2/t clinker in the context of EU emissions trading would be much more limitative and unaligned to the principles of reducing the clinker intensity of cement. It is narrower in scope and application and was designed for different purposes. It reflects manufacturing conditions that are limited to Europe and do not provide a global perspective nor a global benchmark
Other, please specify	Support	Direct engagement in public events (organised by the institutions such as Cembureau as well as third parties, and response to public consultations (contributions publicly available) through official channels. Contribution to the work of think tanks and trade federations, in full transparency (agendas, lists of participants and minutes).	a) Learn from mistakes of the past and reform the EU ETS: a. make total supply of allowances to the market flexible, b. support introducing a Market Stability Reserve (MSR), allocate free allowance on the basis of actual – and not on historic – production. b) Industry needs a level playing field between domestic producers and importers: convergence of national approaches, inclusion of importers in EU CO2 rules in absence of 2015 international agreement.
Carbon tax	Support	Carbon pricing mechanisms, such as the EU ETS, can form efficient policy tools to incentivize the reduction of CO2 emissions. In the short-to-medium term, this will only be achievable if the system guarantees a level playing field across industries and countries. Such level playing field between domestic producers and importers, and among industries, avoids carbon "leakage" and avoids the creation of a distortive environment in downstream markets. This may necessitate a redesign of existing carbon pricing mechanisms in order to include importers in existing schemes.	Projections have shown that under ETS Phase IV, at a carbon price of €28/t, >20% of the European clinker demand is at risk of being met by non-EU imports. This, in turn, will lead to an increase in clinker-related CO2 emissions (estimated at 8% by 2030) as identified offshore sources are generally less efficient compared to existing EU-based installations. In order to avoid the import of CO2 in Europe to meet construction demand, in order to maintain the competitiveness of EU industry and in order to lead the decarbonisation of cement production, the EU ETS needs to be complemented by an import protection mechanism. This may take the form of an inclusion mechanism or border adjustment charges. Such complementary systems need to: i) be phased-in in parallel with the EU ETS and the maintenance of free allocations; ii) target all ETS sectors competing in downstream market in order to avoid the creation of a distortive environment; iii) be compatible with trade agreements.

**C12.3b**

**(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?**

Yes

**C12.3c**

**(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.**

**Trade association**

Cembureau

**Is your position on climate change consistent with theirs?**

Consistent

**Please explain the trade association's position**

Low-carbon manufacturing: The cement industry will continue to invest in the transition to a low-carbon economy. As an energy intensive industry committed to this low-carbon transition, it is essential to maintain the competitiveness of Europe-based manufacturing and ability to invest in Europe. Given The sector's contribution to jobs, growth and innovation in Europe, its track record on energy and resource efficiency and emissions reductions achieved, it is of key importance that the sector has access to competitively priced, carbon-neutral energy on the road to a low carbon economy. A value chain approach: Transitioning to a low-carbon economy is a significant challenge for the EU and the cement sector. Concrete is one of the most long-lasting and durable materials on earth, and EU policies need to acknowledge its contribution to a low carbon transition through the entire life-cycle of buildings. Today's concrete buildings can save up to two-thirds more energy than older structures. Thermally-activated concrete can ensure a better match between energy demand and supply from fluctuating energy sources. Concrete can naturally absorb CO2 in a process called recarbonisation. Concrete could potentially offset a considerable proportion of production emissions over its life-cycle. The low-carbon transition in the built environment will require a supply chain approach that allows for collaboration across the construction value chain. This can be achieved by focusing on a holistic implementation of material-neutral and life cycle performance, incentivising demand for low-carbon materials and solutions.

**How have you influenced, or are you attempting to influence their position?**

We contribute to the development of Cembureau agenda on climate change through active participation. LafargeHolcim representatives lead the work on standardization for GHG reporting, and are active in 4 working bodies whose main focus is Climate Change. In 2019, the country CEO of LafargeHolcim Spain, was appointed Cembureau's new vice-president.

**Trade association**

International Emission Trading Association (IETA)

**Is your position on climate change consistent with theirs?**

Consistent

**Please explain the trade association's position**

The International Emission Trading Association deals with regulators, NGOs and external stakeholders to promote the use of ETS systems, to improve the way they work and ensure fungibility and comparability of different carbon systems.

**How have you influenced, or are you attempting to influence their position?**

LafargeHolcim has an active role in the development of IETA agenda; and LafargeHolcim representatives are members of several working groups.

**Trade association**

Zürich Carbon Markets Association (ZCMA)

**Is your position on climate change consistent with theirs?**

Consistent

**Please explain the trade association's position**

The ZCMA provides a network for knowledge sharing for all organisations that are interested in the evolution of sustainability focused and high quality carbon markets with the aim to mitigate greenhouse gas emissions.

**How have you influenced, or are you attempting to influence their position?**

LafargeHolcim has representation actively driving the ZCMA's program of activities.

**Trade association**

Global Cement and Concrete Association

**Is your position on climate change consistent with theirs?**

Consistent

**Please explain the trade association's position**

The GCCA (Global Cement and Concrete Association) supports the development of national industry roadmaps to define the potential to reduce carbon emissions from the cement industry and the transition to a low carbon economy. Through the GCCA (previously the Cement Sustainability Initiative), the sector has worked together with the International Energy Association on a Technology roadmap consistent with limiting the average global temperature increase to 2 degrees. This roadmap sets out a key strategy for the cement sector to achieve decoupling of expected cement production growth from related direct CO2 emissions. This roadmap sets the pathway for the industry to reduce its emissions by 24% from current levels, despite the anticipated increased production by 2050.

**How have you influenced, or are you attempting to influence their position?**

LafargeHolcim was a founder member of the GCCA and has an active role in the development of the GCCA's agenda. In 2018 LafargeHolcim championed a focus area on Circular Economy and Resource Efficiency and its representatives were part of several working groups, including the focus area on Climate Change and Energy. In addition, LafargeHolcim subsidiaries are participating in the Low Carbon Technologies Partnership. The use of the roadmap is the first step to developing climate regulations, setting targets for emissions reduction, financed with national resources and reduction financed with international funds.

**Trade association**

The European Round Table of Industrialists (ERT)

**Is your position on climate change consistent with theirs?**

Consistent

**Please explain the trade association's position**

To reduce CO2 emissions, binding commitments by the developed countries and Nationally Appropriate Mitigation Actions (NAMAs) of developing countries along with robust measurement, reporting and verification (MRV) are necessary to underpin actions and provide clear signals for investment. All governments should be encouraged to develop national, regional and sector based greenhouse gas emission reduction plans including CO2 pricing mechanisms. ERT continues to support the development of carbon markets as the approach that can deliver CO2 reductions at the lowest cost. Industry is a source of sustainable solutions and must be involved in the decision-making and implementation of the various mechanisms and repository of tools that could be used in multilateral and bilateral agreements which may emerge from the on-going negotiations. In particular, industry input should be sought for the development of the framework on the technology mechanism and on the financing of NAMAs through the Green Climate Fund. ERT highlights that Europe is part of a global market and we need to find ways to keep Europe growing while limiting our carbon footprint and increasing energy efficiency. Climate change is foremost a global challenge and the EU should keep convincing other regions to make similar commitments and putting in place policies such as carbon pricing to reach the objectives. Further information on the ERT's position on climate change is available online at <http://www.ert.eu/issue/climate-change>.

**How have you influenced, or are you attempting to influence their position?**

LafargeHolcim former co-chairman Bruno Lafont was Chairman of the Energy and Climate Change working group in 2016. LafargeHolcim is still an active participant to the climate groups and plays a leading role in the development of forward-looking engagement on the low-carbon transition.

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## C12.3d

**(C12.3d) Do you publicly disclose a list of all research organizations that you fund?**

Yes

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## C12.3f

**(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?**

Updates on advocacy initiatives supporting our climate change strategy are regularly presented to our main governing bodies, Board of Directors and the Executive Committee.

At regional levels, representative groups of CEOs and functional managers regularly meet and exchange on the latest regulatory developments and activities influencing policy, and newsletters on the topic are distributed. Local initiatives are also circulated for potential replication within the group. Regional positions (e.g. reform of EU ETS) are developed with the involvement of all legal entities in the regions, as well as all relevant company departments (such as climate protection, carbon trading and public affairs). All positions are systematically validated by regional leadership teams and consistent with global positions to ensure alignment and consistency.

At Group level, the Group Public Affairs department is responsible for the coordination of advocacy actions within LafargeHolcim and holds direct and specific responsibility for climate change related issues.

As such, it ensures that the Group's long-term interests – in line with broader societal interests – are consistent, and taken into account by public authorities.

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## C12.4

**(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).**

**Publication**

In mainstream reports

**Status**

Complete

**Attach the document**

04172019-finance-lafargeholcim\_fy\_annual\_report-en.pdf

14052019\_publications\_lafargeholcim-sustainability-report-2018.pdf

**Page/Section reference**

i) Annual Report 2018 Governance: page 14 Strategy: pages 46-54 Emission targets: 46 Other metrics: page 50 Risk & Opportunities: pages 68, 71, 73, 74 ii) Sustainability Report 2018 Governance: pages 11, 12 Strategy: pages 15 to 29 Emission targets: 23, 24, 65 Emission figures: 23, 24, 65 Other metrics: page 65

**Content elements**

Governance

Strategy

Risks & opportunities

Emissions figures

Emission targets

Other metrics

**Comment**

C14. Signoff

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C-FI

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**(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.**

C14.1

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**(C14.1) Provide details for the person that has signed off (approved) your CDP climate change response.**

	Job title	Corresponding job category
Row 1	LafargeHolcim Group CEO	Chief Executive Officer (CEO)

Submit your response

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**In which language are you submitting your response?**

English

**Please confirm how your response should be handled by CDP**

	Public or Non-Public Submission	I am submitting to
I am submitting my response	Public	Investors

**Please confirm below**

I have read and accept the applicable Terms