

C0. Introduction

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C0.1

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

LyondellBasell is one of the largest plastics, chemicals, and refining companies in the world. Driven by its employees around the globe, LyondellBasell produces materials and products that are key to advancing solutions to modern challenges like enhancing food safety through lightweight and flexible packaging, protecting the purity of water supplies through stronger and more versatile pipes, improving the safety, comfort, and fuel efficiency of many of the cars and trucks on the road, and ensuring the safe and effective functionality of electronics and appliances.

We sell products into more than 100 countries and are the world's largest producer of polypropylene compounds. We participate globally across the petrochemical value chain and are an industry leader in many of our product lines. Our chemicals businesses consist primarily of large processing plants that convert liquid and gaseous hydrocarbon feedstocks into plastic resins and other chemicals.

Our customers use our plastics and chemicals to manufacture a wide range of products that people use in their everyday lives, including food packaging, home furnishings, automotive components, paints and coatings. Our refining business consists of our Houston refinery, which processes crude oil into refined products such as gasoline, diesel and jet fuel. We also develop and license chemical and polyolefin process technologies and manufacture and sell polyolefin catalysts.

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
Reporting year	January 1 2020	December 31 2020	No	<Not Applicable>

C0.3

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

- Argentina
- Australia
- Belgium
- Brazil
- China
- France
- Germany
- India
- Indonesia
- Italy
- Malaysia
- Mexico
- Netherlands
- Poland
- Spain
- Sweden
- Thailand
- Turkey
- United Kingdom of Great Britain and Northern Ireland
- United States of America

C0.4

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

USD

C0.5

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**(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 chosen approach for consolidating your GHG inventory.**

Operational control

C-CH0.7

**(C-CH0.7) Which part of the chemicals value chain does your organization operate in?**

Row 1

**Bulk organic chemicals**

- Lower olefins (cracking)
- Aromatics
- Ethylene oxide & Ethylene glycol
- Ethanol
- Methanol
- Polymers

**Bulk inorganic chemicals**

- Hydrogen

**Other chemicals**

- Specialty organic chemicals

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	Our Board leads our commitment to sustainability and maintains oversight of the Company's ESG profile. In 2020, the Board focused inter alia on climate change issues during dedicated sessions at three of its five regularly scheduled meetings. In carrying out its strategic responsibility, the Board has delegated to our Health, Safety, Environment & Operations (HSE&O) Committee its oversight with regards to our climate change programs. As part of its responsibilities on our health, safety and environmental programs, the Health, Safety, Environment & Operations (HSE&O) Committee assists the Board in its oversight responsibilities by assessing the effectiveness of climate change programs and initiative that support Company policies. The HSE&O Committee comprises four independent directors. The specific responsibilities of the HSE&O Committee include: - Review the status of the Company's climate change policies and performance, including processes to ensure compliance with applicable laws and regulations - Review and monitor the Company's climate change results, provide oversight of the Company's programs, initiatives and activities in the areas of technology and sustainability, and review the progress and results for capital projects and turnarounds. Example of climate-related decision in 2020: In 2020, our Board reviewed our climate strategy and its underlying program areas to reduce scope 1 and 2 emissions, with pilots running in two of our largest sites in Europe. These program areas support our existing climate goal, to reduce GHG intensity by 15% by 2030 from a 2015 baseline.

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	Scope of board-level oversight	Please explain
Scheduled – some 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	<Not Applicable>	Our Board leads our commitment to sustainability and maintains oversight of the Company's ESG profile. In 2020, the Board focused inter alia on climate change issues during dedicated sessions at three of its five regularly scheduled meetings. Included in the review of climate-related topics are (1) corporate strategy including climate goals, (2) policies, programs and practices, (3) progress against corporate target, (4) budget requirements for programs material to climate. As needed, our Board will review capital allocation requirements and specific initiatives on climate.

**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)	Reporting line	Responsibility	Coverage of responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly
Chief Sustainability Officer (CSO)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly
Sustainability committee	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly

**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).**

**Chief Executive Officer**

**Position in the Company:** Our Chief Executive Officer (CEO) has overall responsibility for our climate change program as part of our wider sustainability strategy. He heads the company's Leadership Team, many members of which play an active role in addressing strategic or operational matters concerning climate change.

**Responsibilities with regards to the assessment and steering of climate-related issues:** In this role, our CEO oversees our progress through regular reporting and discussion on key topics and initiatives with his direct reports. Key items include the development of climate-related corporate strategy including goals, monitoring progress against these goals, approving programs and initiatives towards the achievement of the goals, and associated capital expenditure requirements.

Along with our Chief Sustainability Officer (CSO), he provides regular briefings to the Board concerning strategy and progress regarding climate initiatives. Monthly meetings are scheduled with our CEO and members of our Leadership Team to review progress against our climate targets and related programs and initiatives.

**Rationale for the assignment:** Our Chief Executive Officer (CEO) has overall responsibility for our climate change program as part of our wider sustainability strategy.

**Chief Sustainability Officer:**

**Position in the Company:** The Chief Sustainability Officer (CSO) role is performed by the Company's Senior Vice President of R&D, Technology and Sustainability.

**Responsibilities with regard to the assessment and steering of climate-related issues:** The CSO is responsible for the steering and monitoring of our sustainability programs, including climate change, at a senior level. The CSO is responsible for informing Company leadership, as well as the Board, about sustainability performance, strategy and programs, including climate-related information. The CSO is supported by a global group of employees led by our Director, Global Sustainability, who is responsible for the management of climate change programs as part of the management of our wider sustainability programs.

**Rationale for the assignment:** The CSO is responsible for the overall development and deployment of our sustainability strategy. Consequently, the responsibility for climate-related issues has been assigned to this position.

**Sustainability Committee**

**Position in the Company:** The Sustainability Steering Committee is chaired by the Chief Sustainability Officer, and its membership includes the heads of each business segment (Olefins and Polyolefins, Advanced Polymers, Refining and Intermediate Chemicals), as well as our finance, legal, public affairs, and Health, Safety and Environmental (HSE) functions.

**Responsibilities with regard to the assessment and steering of climate-related issues:** The Committee, a subset of the CEO's leadership team, meets monthly to align and embed the sustainability strategy, including on climate change, within our corporate strategy. This includes assessing risks and opportunities, setting goals, and overall direction on activities that support progress towards the Company's 2030 sustainability ambitions.

**Rationale for the assignment:** The Committee, as a subset of the CEO's leadership team, is responsible for embedding the sustainability strategy within our corporate strategy. Climate-related issues fall under the scope of this assignment as well.

**C1.3**

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

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	

**C1.3a**

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

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Chief Sustainability Officer (CSO)	Monetary reward	Emissions reduction target	A key deliverable of the CSO role includes the formulation of climate strategy, and management of various functions within the company to ensure that the climate strategy is implemented as planned.
Other, please specify (Variable Cost Manager)	Monetary reward	Energy reduction project	LyondellBasell has a network of energy leads who identify energy saving opportunities, manage energy reduction projects and disseminate best practices through our internal knowledge exchange system. They also provide guidance and assistance to sites that certify under the ISO 50001 standard. Individuals in this group are evaluated based on goals and objectives for meeting energy reduction targets.
Other, please specify (Research and Development)	Monetary reward	Efficiency project	Individual and groups who work in research and development are incentivized through goal setting and bonuses to create improvements to manufacturing processes to reduce the utilization of resources and environmental impacts and to create products which contribute to solving global issues including climate change
All employees	Non-monetary reward	Other (please specify) (Exceptional individual, team performance)	The Rewards and Recognition system is open to all non-senior management employees and is designed to recognize employees for exceptional individual and team performance. Some of these efforts include the optimization of resources and energy and emissions reductions.
All employees	Non-monetary reward	Other (please specify) (Exceptional individual, team performance)	Every two years, LyondellBasell recognizes and celebrates positive business outcomes and the teamwork behind those achievements with the EXCELLENCE Awards. The awards represent the highest honor an employee or team can receive from the company, recognizing excellence in advancing sustainability, product innovation, business advancement, operational excellence, customer service, living our values, community engagement, and lifetime achievement. Climate- or energy-related initiatives are eligible to be nominated for an EXCELLENCE Award.

**C2. Risks and opportunities**

**C2.1**

**(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?**

Yes

**C2.1a**

**(C2.1a) How does your organization define short-, medium- and long-term time horizons?**

	From (years)	To (years)	Comment
Short-term	0	5	Timeframe is specifically defined for climate-related risks as part of our wider enterprise risk management process. We have defined longer timeframes for climate-related risks than we typically do for Enterprise risks due to the need for longer term forecasts.
Medium-term	5	20	Timeframe is specifically defined for climate-related risks as part of our wider enterprise risk management process. We have defined longer timeframes for climate-related risks than we typically do for Enterprise risks due to the need for longer term forecasts.
Long-term	20		Timeframe is specifically defined for climate-related risks as part of our wider enterprise risk management process. We have defined longer timeframes for climate-related risks than we typically do for Enterprise risks due to the need for longer term forecasts.

**C2.1b**

**(C2.1b) How does your organization define substantive financial or strategic impact on your business?**

LyondellBasell integrates climate related risks and opportunities into its Enterprise Risk Management (ERM) Program. There is however, a dedicated Climate Change Risk Management Process that is under development that is a derivative of the overall ERM Program. This means that specific Climate related risks will be addressed through a structured and formal approach.

Substantial risks or opportunities for climate related risks are defined by the following thresholds:

- (1) Substantive financial risk: EBITDA loss of >\$500MM and/or Increase in operating or capital costs >10% of annual budgeted spend
- (2) Substantive environmental risk: Release of material that causes persistent, substantial off-site environmental damage extending over a large area
- (3) Substantive reputational risk: brand impairment, loss of stakeholder confidence and long-term damage to enterprise value
- (4) Substantive financial opportunity: Substantial financial gains or an increase in savings and efficiencies of >\$100MM
- (5) Substantive strategic opportunity: Enhancement of competitive advantage or long-term viability through positive national publicity and wide-spread industry recognition, Substantial stakeholder confidence and long-term enhancement of our enterprise value

**C2.2**

## (C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

### Value chain stage(s) covered

Direct operations  
Upstream  
Downstream

### Risk management process

Integrated into multi-disciplinary company-wide risk management process

### Frequency of assessment

More than once a year

### Time horizon(s) covered

Short-term  
Medium-term  
Long-term

### Description of process

1. Process description 1.1 Integration into Corporate Risk Management LyondellBasell integrates climate related risks and opportunities into its Enterprise Risk Management (ERM) Program. There is however, a dedicated Climate Change Risk Management Process that is underway that is a derivative of the overall ERM Program. This means that specific Climate related risks will be addressed through a structured and formal approach. The Climate Change Risk Management Process is within the ERM program and risks are in the process of being identified, assessed, evaluated, responded to, and monitored by various experts across the company. This includes representation from Finance, Investor Relations, Legal, Supply Chain, Government Relations, Public Affairs, Strategy, Procurement, R&D, and Business segments. The risks will be evaluated with input and alignment from the Leadership Team members of the Sustainability Steering Committee 2-4 times per year. The ERM process utilizes a six-step risk management process that includes (for both risks and opportunities): 1. Understand Objectives 2. Identification 3. Assessment 4. Evaluation 5. Response 6. Monitoring and Reviewing This is an iterative and dynamic process that is based on the International Standard ISO31000. 1.2 Process for Risk Identification Climate related threats and opportunities are identified at an Enterprise Level (i.e. with Leadership Team), Department Level (Manufacturing Sites) and at a Program/Project level where appropriate. For identification of threats and opportunities that could have a substantive financial or strategic impact, we analyse the nature of the risk and determine the level of risk exposure (both the likelihood of the risk occurring, and the impact if it occurs). Climate related risks are identified at the following levels through a dedicated climate change risk process: - Relevant Enterprise-Level Risks - Appropriate Department Risks - Whether impactful to specific Projects The method to identify risks are undertaken via: - Semi-structured risk interviews - Workshop brainstorming with a range of participants - Anonymised risk surveys - Input from external subject matter experts 1.3 Process for Assessing Risks Assessing risks involve Likelihood and Impact ratings. Likelihood: The assessment of likelihood considers any previous instances of the risk occurring either internally or externally of LyondellBasell. By analysing historic event data in conjunction with current controls and early warning indicators, an estimated likelihood can be determined. Impact: Impact is the effect of the risk occurring. This can be assessed using both financial criteria and non-financial criteria such as regulatory, safety, reputational and people impacts. The impacts consider both the immediate consequences of a risk materializing and also the knock-on effects. The impact is assessed based on the "primary impact category" i.e. what impact would matter the most and is credible if the risk was to ever occur. This likelihood and impact assessment leads to a risk rating. Further evaluation of the risk establishes whether additional actions are required to meet the aspirational risk exposure. For climate-related risks, the risk assessment process includes consideration of the following two additional factors: Vulnerability and velocity. This helps to determine prioritization of risks. For climate-related risks, the additional factors support prioritization when the Likelihood and Impact assessment for risks are the same. Risks can then be differentiated based on how quickly they may arise and the ability to address them. 1.4 Process for Managing Risks Each identified and assessed risk is evaluated using defined criteria to determine whether it is within an acceptable level of risk exposure. To reduce risk exposure, potential risk responses are evaluated for feasibility and via a cost - benefits analysis. Furthermore, to manage and monitor such risks, Early Warning Indicators which are measurable over time are developed for each risk and actions are tracked with risk owners. 2. Case study – Physical risks Situation: Low water levels on the Rhine River (assumption <1 meter) may result in supply disruptions that lead to an inability to bring feedstock to the cracker at our Wesseling site (our largest in Europe) for a prolonged duration (assumption at least 10-14 days). The low-water event in 2018 highlighted the general relevance of this risk. Task: In light of the effects in 2018 we saw the necessity to further analyze this risk to our business and thus creating the basis for the definition of required mitigation measures. Action: A series of risks workshops were undertaken with subject matter experts to assess the risk, impact and develop response plans. The subject matter experts worked with Enterprise Risk Management to analysis the likelihood of occurrence based on historic weather trends and climatic projections. They also undertook an analysis on logistics and supply chain options. Result: Results from our workshops and further analysis of the impacts on our supply chain showed that the risk is moderate as it impacts our ability to produce products and deliver products to our customers on a timely basis. We also identified options for storage, and alternative supply chain and logistics have been developed to support the mitigation of future supply chain disruptions from low River Rhine levels. 3. Case study – Transitional risks Situation: We expect increasing ETS certificate prices due to an increase in the EU 2030 climate targets, leading to higher costs for our energy production. Task: In order to limit the exposure to this carbon price risk, we constantly need to identify and address the energy efficiency at our sites, thereby also reducing our emissions and the cost burden from the ETS. Action: We have launched a dedicated Carbon Reduction Program that helps us identify and eventually reduce GHG emission intensity of our processes through the implementation of process optimisations and technologies. Within this program, we evaluate a number of different reduction opportunities around process optimisation (e.g. heat integration, waste heat to power, flare gas recovery or fuel switch to lower carbon intensive fuels), energy management systems to monitor and control energy streams, or process electrification. Results: We identified mitigation potentials at our site in Wesseling (Germany), which is our largest emitting site in Europe. We ultimately managed to address relevant mitigation potentials at that site, thereby also considerably reducing our exposition to carbon pricing in the EU ETS. In 2020, we reduced annual emissions by 100kt through increased energy efficiency and optimisations in our power plant operations. Based on an average carbon price of 50 EUR, that will help us reduce our ETS compliance costs by 5 MM EUR annually.

## C2.2a

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

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	As an energy intensive business, LyondellBasell is impacted by existing and emerging energy and climate legislation. This policy and legal transition risk has a direct impact on our operational costs. For example, the majority of our European production sites are included in the ETS scheme, representing 30% of our total scope 1 emissions. LyondellBasell currently incorporates the allocation of credits and costs associated with the ETS into annual and long-range financial planning, as well as factoring it into analysis or planning carried out by the engineering and manufacturing organisations. In light of changes resulting from the commencement of ETS Phase IV in 2021, we expect to incur additional costs in relation to future carbon or GHG emission trading schemes (see below). Another regulatory risk example is the cost of Renewable Identification Numbers ("RINs"), which are renewable fuel credits mandated by the U.S. Environmental Protection Agency (the "EPA"), and can also affect profitability for our refining segment.
Emerging regulation	Relevant, always included	We may incur substantial costs to comply with climate change legislation and related regulatory initiatives. There has been a broad range of proposed or promulgated international, national and state laws focusing on greenhouse gas ("GHG") reduction. These proposed or promulgated laws apply or could apply in countries where we have interests or may have interests in the future. Laws and regulations in this field continue to evolve and, while they are likely to be increasingly widespread and stringent, at this stage it is not possible to accurately estimate either a timetable for implementation or our future compliance costs relating to implementation. In the U.S., the EPA promulgated federal GHG regulations under the Clean Air Act affecting certain sources. The EPA issued mandatory GHG reporting requirements, requirements to obtain GHG permits for certain industrial plants and GHG performance standards for some facilities. Although the EPA recently scaled back certain GHG requirements, addressing climate change is a stated priority of President Biden and as such additional regulations and legislation are likely to be forthcoming at the U.S. federal or state level that could result in increased operating costs for compliance, or required acquisition or trading of emission allowances. Additionally, demand for the products we produce may be reduced.
Technology	Relevant, always included	Risks related to developments in decarbonisation technologies may have a direct impact on our ability to meet reduction targets, for example through changes in our production processes and our ability to provide products meeting our customers' climate goals (nexus to market risk – see below). We strongly believe in the role emerging technologies will have to play to reduce GHG emissions in the chemical sector. A cross functional team led by R&D assesses new technology developments and their suitability in LyondellBasell's operations and to meet our reduction targets. For example, teams are working on the mitigation of technology risk through constant innovation in the areas of olefin production technology, emission capture, hydrogen, process electrification including steam crackers, and hydrogen.
Legal	Relevant, always included	LyondellBasell considers the potential for litigation and other legal risks in its climate-related risk assessments. For example, we monitor the development of climate-related litigation in the jurisdictions that are relevant to the company and apply insights from those developments to our risk assessments. For example: A 2021 court ruling in the Netherlands holding that a large global company was required to accelerate GHG reduction efforts because the applicable standard of care incorporates human rights obligations illustrates the potential risk of climate litigation increasing in the future. Should LyondellBasell be subject to similar litigation, it could increase the cost of meeting our climate goals due to an accelerated pace, and may also lead to reputational risk or loss of stakeholder confidence.
Market	Relevant, always included	There is an increasing awareness in downstream markets of the overall CO2 footprint of products. We regularly engage with customers to understand their climate goals and inform them of developments in our own strategy and progress against corporate targets. This was demonstrated for example through the development and launch of our Circulen product line which includes products linked to mechanical recycling, chemical recycling, and renewable-based feedstocks.
Reputation	Relevant, always included	LyondellBasell considers how we are regarded as a company committed to sustainability and addressing climate challenges to our stakeholders, including in our communities, and with our customers. We understand the impact our work has on society, and the impact our response to climate change has on stakeholder confidence and viability in the long term. Changing customer demand related to climate change may also create threats or opportunities based on our speed and ability to respond adequately. For example: Should LyondellBasell be considered as insufficient in addressing climate challenges to the expectations of our stakeholders and customers, this could result in adverse financial effects, for example through loss of market share from customer deselection, departure of employees, or loss of shareholder support.
Acute physical	Relevant, always included	Weather and other climatic events may affect our supply chain and our operations, for example in regions that are potentially vulnerable to hurricanes such as the Houston Gulf Coast. Potential physical impacts of climate change include acute occurrences of increased frequency and severity of hurricanes and floods as well as drought conditions. Although we have preparedness plans in place designed to minimize impacts and enhance safety, should an event occur, it could have the potential to disrupt our supply chain and operations. For example, a number of our operations are located on the Gulf Coast, which has been impacted by hurricanes that have required us to temporarily shut down operations at those sites.
Chronic physical	Relevant, always included	Potential chronic physical impacts of climate change include global sea level rise and chronic drought conditions. Although we have preparedness plans in place designed to minimize impacts and enhance safety, should an event occur, it could have the potential to disrupt our supply chain and operations. For example, we have already observed restrictions to shipping feedstock due to the depletion of the Rhine River in Germany in times of unseasonal weather variation.

**C2.3**

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

No

**C2.3b**

**(C2.3b) Why do you not consider your organization to be exposed to climate-related risks with the potential to have a substantive financial or strategic impact on your business?**

	Primary reason	Please explain
Row 1	Evaluation in process	LyondellBasell integrates climate related risks and opportunities into its Enterprise Risk Management (ERM) Program. There is however, a dedicated Climate Change Risk Management Process that is underway that is a derivative of the overall ERM Program. This means that specific Climate related risks will be addressed through a structured and formal approach. The Climate Change Risk Management Process is within the ERM program and risks are in the process of being identified, assessed, evaluated, responded to, and monitored by various experts across the company. The risks will be evaluated with input and alignment from the Leadership Team members of the Sustainability Steering Committee 2-4 times per year. Our initial assessments have identified a number of climate-related risk types as highlighted in section C2.2 covering (1) regulatory risks, both current and emerging, (2) risks related to technology developments and uses, (3) legal risks, (4) market risks, (5) reputational risks, and (6) physical risks, both acute and chronic. We are in the process of evaluating these risks and determining and describing the appropriate response in line with our risk process. While we are in the process of conducting a thorough evaluation of the risks identified under the risk types listed above, an example of a risk identified from our initial assessment is linked to the financial impact to our operating costs for our sites operating under the European Emissions Trading Scheme (EU ETS). The following description is an example to the management response we are developing to address risks. As part of our management response for the carbon pricing risk we use two strategies: Firstly, we have a dedicated purchasing strategy that hedges against the volatility in market prices to help avoid cost spikes for credits. Secondly, we have established a Carbon Reduction Program that aims to limit the exposure to this carbon price risk and the cost burden from the ETS by reducing the emissions at our sites. We are reducing the GHG emission intensity of our processes through the implementation of process optimisations and technologies. Within this program, we evaluate a number of different reduction opportunities around process optimisation (e.g. heat integration, waste heat to power, flare gas recovery or fuel switch to lower carbon intensive fuels), energy management systems to monitor and control energy streams, or process electrification.

**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?**

No

**C2.4b**

**(C2.4b) Why do you not consider your organization to have climate-related opportunities?**

	Primary reason	Please explain
Row 1	Evaluation in progress	LyondellBasell integrates climate related risks and opportunities into its Enterprise Risk Management (ERM) Program. There is however, a dedicated Climate Change Risk Management Process that is underway that is a derivative of the overall ERM Program. This means that specific Climate related opportunities will be addressed through a structured and formal approach. The Climate Change Risk Management Process is within the ERM program and opportunities are in the process of being identified, assessed, evaluated, responded to, and monitored by various experts across the company. This includes from Finance, Investor Relations, Legal, Supply Chain, Government Relations, Public Affairs, Strategy, Procurement, R&D, and Business segments. The opportunities will be evaluated with input and alignment from the Leadership Team members of the Sustainability Steering Committee 2-4 times per year. While we are in the process of conducting a thorough process to identify and evaluate relevant opportunities, examples of opportunities identified from our initial assessment linked to the opportunity types listed above are shown below: Development of lower carbon production solutions: Our Circulen product portfolio includes polymers linked to mechanically recycled materials, chemically recycled materials, and renewable-based feedstocks. Our CirculenRenew polymers are manufactured from renewable-based feedstocks such as waste biomass, using a mass balance approach. Life cycle assessment studies conducted for CirculenRenew have shown that they provide significant carbon savings, by up to 75%, compared to their fossil-based equivalent. We expect these products to play an important role in reducing the lifecycle emissions of a number of different end user products, for example in consumer goods and the automotive industries. Leveraging collaboration opportunities with third parties through R&D and innovation: Through our collaboration with the Karlsruhe Institute of Technology in Germany to develop our molecular recycling technology MoReTec, we advance the efficiency and scalability of molecular recycling. We expect that our proprietary technology involving a catalytic pyrolysis process will allow us to reduce energy use, and thereby emissions, compared to other advanced recycling techniques.

**C3. Business Strategy**

**C3.1**

**(C3.1) Have climate-related risks and opportunities influenced your organization's strategy and/or financial planning?**

Yes

**C3.1b**

**(C3.1b) Does your organization intend to publish a low-carbon transition plan in the next two years?**

	Intention to publish a low-carbon transition plan	Intention to include the transition plan as a scheduled resolution item at Annual General Meetings (AGMs)	Comment
Row 1	Yes, in the next two years	No, we do not intend to include it as a scheduled AGM resolution item	LyondellBasell will continue to communicate on its climate change strategy through our sustainability report and other suitable channels such as our corporate website.

**C3.2**

**(C3.2) Does your organization use climate-related scenario analysis to inform its strategy?**

Yes, qualitative, but we plan to add quantitative in the next two years

**C3.2a**

**(C3.2a) Provide details of your organization's use of climate-related scenario analysis.**

Climate-related scenarios and models applied	Details
IRENA RCP 2.6 RCP 8.5 IEA Sustainable development scenario	Identification process: Following the identification of climate-related risks and opportunities for LYB's operations, we have analysed the potential exposure of each risk by assessing their probability, consequence, vulnerability and velocity. We have developed two scenarios until 2050. The first scenario is a future state up to 2050 with limiting global warming to well below 2°C, the second scenario looks to a future state in line with 4°C global warming (the business as usual scenario). Both the scenarios have been developed based on input and models from IRENA World Energy Transitions Outlook (1.5 C pathway), IPCC RCP 2.6 (well below 2°C), IPCC RCP 8.5 (4°C global warming), as well as the IEA Sustainable Development Scenario 2020. These scenarios are also supported by relevant sector-specific publications. The PESTEL framework (Political, Environmental, Social, Technological, Economical, Legal) has been applied to capture key external driving forces, which are the underlying reasons for change in the magnitude of the probability, consequence, vulnerability and velocity of the risks. The driving forces have been selected based on potential financial or strategic impact on our organization and the uncertainty involved. Examples of driving forces are government stability, international climate change policy, availability of feedstock and low carbon technologies. Time horizon: The time horizon considered in our scenario exercise extends to 2050 with a mid-point at 2030 to align with the goals of the Paris Agreement on a global decarbonization by 2050. Areas of our organization considered as part of the scenario analysis: The scenario analysis covers all business segments, geographic locations where LyondellBasell operates, and our major production sites. The development of scenarios, inputs, assumptions, and analytical methods used to substantiate each scenario were supported by an external consultant in collaboration with LYB stakeholders. Summary of results: From the physical risk assessment, the assessed threats included the following parameters: increase in temperature, low water level, water stress and extreme weather events as part of physical vulnerabilities. As part of the transition risk assessment, the assessed threats included regulations and standards on carbon emissions and other environmental regulations, low carbon technologies, electrification and green hydrogen, replacement of energy-intensive technology, feedstock availability, shift in expectations from business partners, potential changing market demand, insurance capacity, cost of capital and market demand for transparency. The scenario analysis has been used to classify risks in terms of likelihood and as input into LyondellBasell's long term business planning process. The qualitative insights from these scenarios are a starting point for use as inputs into wider business strategy and the planning process. The climate risk assessment and our business strategy will continue to be enriched with a range of inputs.

**C3.3**



**(C3.3) Describe where and how climate-related risks and opportunities have influenced your strategy.**

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Evaluation in progress	LyondellBasell believes that there may be an increase in demand for more sustainable products in the future due to an increasing interest in carbon reduction and circularity from customers and wider society. This has led LyondellBasell to invest in the development of products such as our Circulen portfolio, based on mechanical and advanced recycling and renewable feedstocks. We also continued the development of our new process technology, Hyperzone, which produces tougher and stronger polymers that are more resistant to cracks while using less material. Our proprietary Hyperzone PE plant in La Porte, Texas has achieved full-scale production utilizing the company's new technology. Such proactive engagement is in line with our long history of pioneering in the development of new polymer materials, and will place LyondellBasell at the forefront of an important climate related megatrend and new emerging market potentials. In parallel, we are currently developing the systems and processes needed to assess our current product portfolio against a set of criteria for defining low carbon products and products with other sustainability benefits. We consider short-, medium- and long-term impacts to our business objectives in our assessment.
Supply chain and/or value chain	Evaluation in progress	We have started the evaluation of climate-related risks and opportunities to our supply and value chain to identify their impacts to our business objectives. As part of our evaluation, we are working towards establishing an accurate baseline and measure the impact of our supply chain on our overall footprint. We consider short-, medium- and long-term impacts to our business objectives in our assessment. As part of this effort, we are engaged in an industry consortium led by Cefic, the European Chemical Industry Council, and the Smart Freight Centre to develop a practical methodology to better account for GHG emissions from our logistics operations. We are also working with our transportation partners to identify low-carbon solutions for the transport of raw materials and products.
Investment in R&D	Evaluation in progress	We are confident in the role emerging technologies will play in the reduction of GHG emissions in the chemical sector. Technologies such as carbon capture, storage and utilization (CCSU), process electrification, green hydrogen, and waste streams valorisation, have the potential to drive the transformational changes needed to enable larger-scale reductions in emissions. In our evaluation of the abatement potential for each of these technologies, we consider short-, medium- and long-term impacts to our business objectives in our assessment. We recognize the importance of active collaboration with our value chain partners in achieving the necessary development and wide application of these technologies to reduce our carbon footprint. In 2020, approximately 20% of our R&D budget was spent on sustainability-related activities, with the majority of these activities driving product innovations with climate related benefits. In this way, we are addressing the increasing demand for climate sensitive products in our markets and capitalizing on new business opportunities. One of many examples where this strategy is visible is our collaboration with the Karlsruhe Institute of Technology in Germany to advance the efficiency and scalability of molecular recycling. This emerging technology enables new plastic to be made from waste plastic instead of fossil fuel. In July 2020, we commissioned a small-scale pilot plant at our site in Ferrara, Italy. We plan to develop optimum process conditions to make the MoReTec technology scalable to a semi-industrial proof-of-concept plant by 2021.
Operations	Evaluation in progress	Our European sites are subject to the European Emissions Trading Scheme (EU ETS) and have already incorporated carbon pricing in their business and financial planning. Similar carbon pricing mechanisms can be expected to be implemented in other regions of the world where we have an operational footprint, such as the United States. We consider short, medium and long term impacts of existing and emerging carbon pricing regulations in our analyses. We have started implementing our Carbon Reduction Program to reduce emissions at our major manufacturing sites as part of our progress against our corporate climate target and to mitigate the financial impact of our regulatory requirements under the EU ETS. Within this program, we evaluate a number of different reduction opportunities around process optimisation (e.g. heat integration, waste heat to power, flare gas recovery or fuel switch to lower carbon intensive fuels), energy management systems to monitor and control energy streams, or process electrification.

C3.4

**(C3.4) Describe where and how climate-related risks and opportunities have influenced your financial planning.**

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues Direct costs Indirect costs Capital expenditures Capital allocation Access to capital Assets Liabilities	Our financial planning is considering climate-related risks and opportunities regarding revenues, costs, capital expenditures, access to capital, and assets and liabilities. Over recent years, our commitment to sustainability and climate has continued to evolve and is an important consideration in setting of our corporate strategy. We consider short-, medium- and long-term impacts to our business objectives in our analyses. Case study on direct costs: Situation: Our energy related costs are a significant portion of our direct operating costs, and, for our European sites under the EU ETS, bring an additional financial impact linked to the cost of allowances. Task: Identify reductions that reduce our energy use and consequently reduce our CO2 emissions. Action: Our Variable Cost program aims to optimise the use of feedstock, energy and other raw materials, with the potential to have a significant impact on our operating costs. Projects under this program also have a direct impact on our scope 1 and 2 emissions, which allow us to mitigate our costs under the EU ETS. This includes minimising losses from flaring operations and using advanced controls and energy optimisers to minimize energy use in our sites. Results: Through this program, we continue to optimise our overall energy consumption and minimise CO2e emissions. In 2020, projects under this program resulted in a reduction of 40,000t of CO2e in our scope 1 emissions.

C3.4a

**(C3.4a) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).**

C4. Targets and performance

C4.1

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

Intensity target

C4.1b

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

**Target reference number**

Int 1

**Year target was set**

2019

**Target coverage**

Company-wide

**Scope(s) (or Scope 3 category)**

Scope 1+2 (market-based)

**Intensity metric**

Metric tons CO2e per unit of production

**Base year**

2015

**Intensity figure in base year (metric tons CO2e per unit of activity)**

0.575

**% of total base year emissions in selected Scope(s) (or Scope 3 category) covered by this intensity figure**

100

**Target year**

2030

**Targeted reduction from base year (%)**

15

**Intensity figure in target year (metric tons CO2e per unit of activity) [auto-calculated]**

0.48875

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

15

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

0

**Intensity figure in reporting year (metric tons CO2e per unit of activity)**

0.611

**% of target achieved [auto-calculated]**

-41.7391304347826

**Target status in reporting year**

Underway

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

No, and we do not anticipate setting one in the next 2 years

**Target ambition**

<Not Applicable>

**Please explain (including target coverage)**

LyondellBasell's corporate target of reducing our product intensity by 15% by 2030 from 2015 levels covers our scopes 1 & 2. We are also in the process of, and committed to, developing our climate ambition beyond 2030. LyondellBasell's climate program continues to advance, targeting emission reductions in our global operations. Included are: - improvements in process and energy efficiency - switching to lower carbon intensive energy sources where feasible. - increasing our use of renewable energy, both generated on-site and purchased from off-site projects - Exploring break-through technologies that advance low-carbon production processes Our intensity figures increased in 2020 against our baseline of 2015 due to an altered manufacturing profile of our businesses during the pandemic, with changes to the product mix and overall drop in manufacturing volumes.

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**C4.2**

**(C4.2) Did you have any other climate-related targets that were active in the reporting year?**

No other climate-related targets

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**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

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**C4.3a**

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**(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		
To be implemented*	0	
Implementation commenced*	5	40847
Implemented*	12	38672
Not to be implemented	0	

**C4.3b**

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

**Initiative category & Initiative type**

Energy efficiency in production processes	Process optimization
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**Estimated annual CO2e savings (metric tonnes CO2e)**

38672

**Scope(s)**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

8997545

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

0

**Payback period**

<1 year

**Estimated lifetime of the initiative**

11-15 years

**Comment**

A wide range of projects were implemented in 2020, including process control system and flare optimization, and energy maintenance programs which mean that no single initiative lifetime applies to all projects. These measures require little to no capital investment for their implementation.

**C4.3c**

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

Method	Comment
Financial optimization calculations	Energy and CO2 reduction projects are subject to the standard LyondellBasell capital allocation and evaluation processes, which include a financial analysis of the project payback period as well as a sensitivity analysis.
Compliance with regulatory requirements/standards	Several LyondellBasell manufacturing sites operate under the EU ETS regulations. The increasing costs associated with compliance act as a financial driver for investment in low-carbon technology and R&D activities.
Internal price on carbon	Integrating climate into our business planning is a crucial step in our journey. In 2020, we began discussions around an internal carbon pricing approach and were able to use our approach to evaluate several capital project investment decisions in the European Union. Under this approach, a shadow price for carbon is based on a variety of factors including geography, current and emerging trends, legislation and other factors we consider applicable. We intend to continue to refine our internal carbon pricing approach and to expand its use for evaluation of future key global capital project investment decisions. Going forward, we also intend to use it to support our assessment of potential investments in low-carbon technologies and to evaluate operational efficiencies, especially in markets that already have a carbon price or in regions where a carbon price is expected to emerge.

**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**

Our product portfolio contains a number of different solutions that provide GHG benefits through a lower cradle to gate GHG footprint, and/or climate benefits in the product's use. For example, our CirculenRenew polymers are made from renewable feedstocks based on waste and residue bio-based oils, using a mass balance approach, and have a wide range of end-use applications. Our manufacturing sites producing our CirculenRenew product line are certified ISCC+ to ensure traceability along our supply chain and enable the application of the mass balance method to attribute renewable-based source material to the final polymer.

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

Low-carbon product and avoided emissions

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

Other, please specify (LCA principles with focus on GHG)

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

1

**% of total portfolio value**

<Not Applicable>

**Asset classes/ product types**

<Not Applicable>

**Comment**

We are currently developing the systems and processes needed to assess our current product portfolio against a set of criteria for defining low carbon products and products with other sustainability benefits.

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## C5. Emissions methodology

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### C5.1

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

**Scope 1**

**Base year start**

January 1 2015

**Base year end**

December 31 2015

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

14443014

**Comment**

**Scope 2 (location-based)**

**Base year start**

January 1 2015

**Base year end**

December 31 2015

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

8685949

**Comment**

**Scope 2 (market-based)**

**Base year start**

January 1 2015

**Base year end**

December 31 2015

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

8685949

**Comment**

Our previous records do not contain market-based emission information, and therefore the location-based emissions are used as a proxy for market-based emissions.

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### C5.2

**(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.**  
American Petroleum Institute Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry, 2009  
European Union Emission Trading System (EU ETS): The Monitoring and Reporting Regulation (MMR) – General guidance for installations  
IPIECA's Petroleum Industry Guidelines for reporting GHG emissions, 2nd edition, 2011  
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)  
The Greenhouse Gas Protocol: Scope 2 Guidance

## C6. Emissions data

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### C6.1

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**(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO<sub>2</sub>e?**

**Reporting year**

**Gross global Scope 1 emissions (metric tons CO<sub>2</sub>e)**

15384254

**Start date**

<Not Applicable>

**End date**

<Not Applicable>

**Comment**

### 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**

### C6.3

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**(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO<sub>2</sub>e?**

**Reporting year**

**Scope 2, location-based**

8899524

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

8688567

**Start date**

<Not Applicable>

**End date**

<Not Applicable>

**Comment**

### 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?**

Yes

### C6.4a

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**(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.**

**Source**

Small office facilities and service buildings

**Relevance of Scope 1 emissions from this source**

Emissions are not relevant

**Relevance of location-based Scope 2 emissions from this source**

Emissions are not relevant

**Relevance of market-based Scope 2 emissions from this source (if applicable)**

Emissions are not relevant

**Explain why this source is excluded**

Our energy and CO2 data currently only encompasses manufacturing facilities, pipelines and large regional offices. Small offices are not included as they have been determined to be non-material (less than 0.5% of LyondellBasell emissions). **(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any excluded sources.**

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**Purchased goods and services**

**Source**

Motor vehicle fuel

**Relevance of Scope 1 emissions from this source**

Emissions are not relevant

**Relevance of location-based Scope 2 emissions from this source**

No emissions from this source

**Relevance of market-based Scope 2 emissions from this source (if applicable)**

No emissions from this source

**Explain why this source is excluded**

LyondellBasell owns vehicles at some manufacturing sites that are used for internal site transportation. The amount of fuel consumed is negligible in comparison to fuel consumed by fired equipment (e.g. steam boilers or furnaces) and represents less than 0.1% of total emissions.

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**C6.5**

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**Evaluation status**

Relevant, calculated

**Metric tonnes CO2e**

43770841

**Emissions calculation methodology**

Data Quantity (mass and volume) of the goods and services, namely refining and petrochemical feedstocks, additives, chemicals, and catalysts were obtained from our internal management systems. Emission factors Emission factors were sourced from different commercial and public data sources, including ecoinvent, PlasticsEurope, and regional regulatory databases. Methodologies and assumptions CO2e emissions in this category were calculated using an average-data approach, in accordance with the WBCSD/WRI GHG Scope 3 Guidance Document. Primary data was obtained from our internal systems on the quantities of purchased goods and services procured from each region, to which we applied regional emission factors to calculate CO2e emissions.

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

0

**Please explain**

**Capital goods**

**Evaluation status**

Relevant, calculated

**Metric tonnes CO2e**

1346795

**Emissions calculation methodology**

Data Primary data relating to capital expenditures (spend \$1.9 billion) was used as the calculation basis, reflecting the spend on capital projects, equipment upgrades and replacement. The database calculations are derived from a 2013 US Dollar basis. Emission factors Emission factors were sourced from different commercial and public data sources, including ecoinvent, PlasticsEurope, and regional regulatory databases. Methodologies and assumptions The CO2e emissions arising from capital goods was calculated using a Spend-Based approach (in accordance with the WBCSD/WRI GHG Scope 3 Guidance Document).

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

0

**Please explain**

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

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

1777724

### Emissions calculation methodology

Data Quantity (mass and volume) of fuels used in our operations were obtained from our internal management systems. Emission factors Emission factors were sourced from different commercial and public data sources, including ecoinvent, PlasticsEurope, and regional regulatory databases. Methodologies and assumptions CO2e emissions in this category were calculated using an average-data approach, in accordance with the WBCSD/WRI GHG Scope 3 Guidance Document. Primary data was obtained from our internal systems on the quantities fuels used in operations in each region, to which we applied regional emission factors to calculate CO2e emissions.

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

0

### Please explain

## Upstream transportation and distribution

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

958462

### Emissions calculation methodology

Data Data on the transportation of our purchased goods, including transport mode, tonnage and distance data, was compiled for each region from our internal management systems. Emission factors Emission factors were sourced from different commercial and public data sources, including ecoinvent, PlasticsEurope, and regional regulatory databases. Methodologies and assumptions CO2e emissions in this category were calculated using an average-data approach, in accordance with the WBCSD/WRI GHG Scope 3 Guidance Document. Tonnage and distance data was multiplied with specific emission factors for each transport mode to calculate emissions.

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

0

### Please explain

## Waste generated in operations

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

1207560

### Emissions calculation methodology

Data Waste tonnage data for each type of waste treatment (incineration, recycling, landfill, etc) was compiled from our internal management systems for all our operations. Emission factors Emission factors were sourced from different commercial and public data sources, including ecoinvent, PlasticsEurope, and regional regulatory databases. Methodologies and assumptions CO2e emissions in this category were calculated using an average-data approach, in accordance with the WBCSD/WRI GHG Scope 3 Guidance Document. Waste tonnage data was multiplied with specific emission factors for each type of waste treatment to calculate emissions.

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

0

### Please explain

## Business travel

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

7244

### Emissions calculation methodology

LyondellBasell's third-party travel provider supplied emissions data resulting from our business travel arrangements. Due to Covid-19 travel restrictions put in place for most of 2020, our business travel volumes have decreased significantly from 2019. The data pertains to travel booked by them, which is comprised of 8.1MM km of air- and 0.06MM km of rail-travel. The methodology does not take business travel using private vehicles or rental cars into account, or where employees have booked travel outside of the corporate travel system.

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

100

### Please explain

## Employee commuting

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

59034

### Emissions calculation methodology

Data Data on regional employee numbers were compiled from our internal management systems. Emission factors Emission factors were sourced from different commercial and public data sources, including ecoinvent, PlasticsEurope, and regional regulatory databases. Methodologies and assumptions The approach taken was to estimate emissions based on regional average commuting modes, and applying emission factors specific to each commuting mode.

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

0

### Please explain

## 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>

### Please explain

LyondellBasell does not lease any significant upstream assets

## Downstream transportation and distribution

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

339021

### Emissions calculation methodology

Data Data on the transportation of our finished goods, including transport mode, tonnage and distance data, was compiled for each region from our internal management systems. Emission factors Emission factors were sourced from different commercial and public data sources, including ecoinvent, PlasticsEurope, and regional regulatory databases. Methodologies and assumptions CO2e emissions in this category were calculated using an average-data approach, in accordance with the WBCSD/WRI GHG Scope 3 Guidance Document. Tonnage and distance data was multiplied with specific emission factors for each transport mode to calculate emissions.

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

0

### Please explain

## 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>

### Please explain

LyondellBasell does not calculate scope 3 emissions linked to the processing of sold products, as these emissions were identified as not material in our overall scope 3 emission footprint. Our portfolio of products includes a diverse range of products, from polymers to different intermediate chemicals, with reliable data difficult to obtain.

## Use of sold products

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

2245368

### Emissions calculation methodology

Data Quantity (mass and volume) of fuel products from our refinery operations and oxyfuels business, was compiled from our internal management systems. Emission factors Emission factors were sourced from different commercial and public data sources, including ecoinvent, PlasticsEurope, and regional regulatory databases. Methodologies and assumptions CO2e emissions in this category were calculated using an average-data approach, in accordance with the WBCSD/WRI GHG Scope 3 Guidance Document.

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

0

### Please explain



## End of life treatment of sold products

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

7509399

### Emissions calculation methodology

Data Quantity (mass and volume) for our products, including sold-to region and application, was compiled from our internal management systems. Emission factors were sourced from different commercial and public data sources, including ecoinvent, PlasticsEurope, and regional regulatory databases. Methodologies and assumptions CO2e emissions in this category were calculated using an average-data approach, in accordance with the WBCSD/WRI GHG Scope 3 Guidance Document. We considered the product volumes sold in each region for specific applications to calculate emissions in this category. We then applied specific emission factors for each waste treatment type. For example, polymer volumes sold to the automotive industry will have different end of life treatments than volumes sold for packaging.

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

0

### Please explain

## 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>

### Please explain

LyondellBasell does not lease any significant downstream assets.

## 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>

### Please explain

LyondellBasell has no franchised businesses or assets.

## Investments

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

6602298

### Emissions calculation methodology

Data Primary data relating to our equity investments (4,729MM USD) was used as the calculation basis, reflecting changes in our equity investments in 2020. Emission factors were sourced from different commercial and public data sources, including ecoinvent, PlasticsEurope, and regional regulatory databases. Methodologies and assumptions CO2 emissions were calculated on the basis of our equity investments using the GHG Protocol Scope 3 calculator.

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

0

### Please explain

## 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>

### Please explain

LyondellBasell does not have any further upstream emissions to report.

**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>

**Please explain**

LyondellBasell does not have any further downstream emissions to report.

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C6.7

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

No

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C6.10

**(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**

0.0008674

**Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)**

24072821

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

27753000000

**Scope 2 figure used**

Market-based

**% change from previous year**

25.43

**Direction of change**

Increased

**Reason for change**

1) Corresponding emission reduction initiative Total scope 1 and scope 2 GHG emissions increased slightly in 2020 compared to 2019. The marginal increase in emissions mostly reflects the altered manufacturing profile of our businesses due to COVID-19. Changes to the product mix and overall drop in manufacturing volumes also contributed to a 25% increase in GHG intensity by unit total revenue and 6% in GHG intensity by production volume. A decrease in flaring and process emissions reported in section C4.3b helped to reduce our emissions.

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**Intensity figure**

0.611

**Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)**

24072821

**Metric denominator**

metric ton of product

**Metric denominator: Unit total**

39417200

**Scope 2 figure used**

Market-based

**% change from previous year**

6.3

**Direction of change**

Increased

**Reason for change**

Total scope 1 and scope 2 GHG emissions increased slightly in 2020 compared to 2019. The marginal increase in emissions mostly reflects the altered manufacturing profile of our businesses due to COVID-19. Changes to the product mix and overall drop in manufacturing volumes also contributed to a 25% increase in GHG intensity by unit total revenue and 6% in GHG intensity by production volume. A decrease in flaring and process emissions reported in section C4.3b helped to reduce our emissions.

## C7. Emissions breakdowns

### C7.1

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

Yes

### C7.1a

**(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).**

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	15345431	IPCC Fifth Assessment Report (AR5 – 100 year)
CH4	6380	IPCC Fifth Assessment Report (AR5 – 100 year)
N2O	10070	IPCC Fifth Assessment Report (AR5 – 100 year)
HFCs	22373	IPCC Fifth Assessment Report (AR5 – 100 year)
PFCs	0	IPCC Fifth Assessment Report (AR5 – 100 year)
SF6	0	IPCC Fifth Assessment Report (AR5 – 100 year)
NF3	0	IPCC Fifth Assessment Report (AR5 – 100 year)

### C7.2

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

Country/Region	Scope 1 emissions (metric tons CO2e)
Americas	11307141
Europe	4059326
Asia Pacific (or JAPA)	1337

### C7.3

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

By facility

### C7.3b

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

Facility	Scope 1 emissions (metric tons CO2e)	Latitude	Longitude
Akron, OH, US	42	41.103721	-81.487345
Allentown, PA, US	0	40.59111	-75.601806
Altamira	0	22.39215	-97.93867
Astorp, Sweden	0	56.124747	12.913611
Batu Pahat, Malaysia	35	1.853898	102.993484
Bay City, MI, US	0	43.59068	-84.00077
Bayport - Choate	239729	29.62001	-95.041931
Bayport - Polyolefins	49635	29.631784	-95.046348
Bayport - Underwood	37116	29.629006	-95.086683
Bedford, VA, US	0	37.344774	-79.494812
Bell Moye Pipeline (LA)	0	30.242149	-93.250709
Berre	1072344	43.4781	5.1704
Bornem, Belgium	0	51.087365	4.260994
Botlek	283128	51.932054	4.140827
Brindisi	11105	40.6321	17.9361
Carpentersville, IL, US	0	42.113637	-88.280577
Carrington	14934	53.430217	-2.397428
Castellon, Spain	55	39.957251	-0.076519
Cerkezoy, Turkey	0	41.296207	27.973264
Changshu, China	0	31.656613	120.752454
Channelview	3313042	29.789498	-95.124701
Chennai	0	12.84831	79.705073

Facility	Scope 1 emissions (metric tons CO2e)	Latitude	Longitude
China, TX	0	30.043333	-94.375128
Chocolate Bayou - Polymers	45672	29.423847	-95.2441
Choupique Pipeline (LA)	0	29.858816	-90.856483
Cincinatti Technical Centre	0	39.276971	-84.345252
Clinton	600185	41.807367	-90.285637
Corpus Christi	1764820	27.822545	-97.572225
Crumlin, UK	0	51.677005	-3.162651
Dalian	319	38.91222	121.60222
Dongguan, China	1	23.009454	114.027025
East Java, Indonesia	0	-7.595665	112.690506
Edison	4492	40.493622	-74.385234
Equistar Pipeline	4902	29.573915	-95.113165
Europoort, NL	0	51.94125	4.137599
Evansville 1800 Lynch, IN, US	0	38.01699	-87.532564
Evansville, Columbia, IN, US	0	37.986475	-87.55064
Evansville, Northbrook, IN, US	0	38.114618	-87.557262
Evansville, O'Hara, IN, US	0	38.024291	-87.519999
Exeter, OH, US	0	41.030021	-81.479169
Fairport Harbor	41	41.754874	-81.277955
Ferrara	47284	45.523611	9.231148
Fos-Caban	188057	43.425387	4.847112
Frankfurt	205	50.095245	8.535962
Franklin, TN, US	0	35.896981	-86.871211
Gainsborough, UK	0	53.391176	-0.745247
Geelong	839	-38.077027	144.379651
Geneva, OH, US	0	41.806491	-80.951972
Givet, France	0	50.157619	4.821837
Gorla, Italy	0	45.659755	8.899144
Grand Junction, TN, US	0	35.048337	-89.189319
Guangzhou/Nansha(BAPG)	0	22.771534	113.54372
Houston Office	0	29.756449	-95.362397
Houston Refinery	2513012	29.710227	-95.236299
Jackson	118	35.627401	-88.777608
Juarez, Mexico	0	19.5197	-99.2572
Kerpen, Germany	0	50.895219	6.652803
Knapsack	6604	50.863739	6.872401
La Porte	1699299	29.720803	-95.069126
Lake Charles	141496	30.191308	-93.323954
Ludwigshafen	3	49.514995	8.420576
Maasvlakte	10665	51.965098	4.015599
Mansfield	0	32.558912	-97.110507
Matagorda	47086	28.793661	-95.943373
Mexico City, Mexico	0	19.509305	-99.152983
Milton Keynes	0	52.007188	-0.728571
Moerdijk	5663	51.670417	4.576996
Morris	650141	41.447901	-88.309867
Mount Belvieu	0	29.845014	-94.895142
Munchsmunster	544227	48.755734	11.703499
Newark	217	40.722974	-74.123066
North Canton, OH, US	0	40.904925	-81.444968
North Kingsville, OH, US	0	41.919206	-80.666168
Opplabbeek, Belgium	0	51.041632	5.543732
Oyonnax, France	0	46.233143	5.624624
Pinda	0	-22.934222	-45.395899
Placedo Pipeline (TX)	0	28.653122	-96.770789
Plymouth, IN, US	0	41.350982	-86.322454
Rayong (BAPT)	0	13.011232	101.193333
Rio Claro, Brazil	0	-22.368499	-47.554095
Rotterdam Office	0	51.924784	4.473625
Sabine Pipeline (LA)	0	30.06838	-93.521935
Saint-Germain Laval	0	48.400724	2.990334
San Luis Potosi, Mexico	0	22.063946	-100.878546
Seevetal, Germany	241	53.424034	10.03541
Senai, Malaysia	39	1.623914	103.670859
s'Gravendeel, Holland	0	51.783154	4.621429
Sinnar	12	19.968362	74.373642
Sumare, Brazil	0	-22.719558	-47.294468
Surplast, Argentina	0	-34.460275	-58.704781
Suzhou (BAPS)	93	31.317678	120.802769
Tarragona	521	41.113317	1.162662
Tuscola	179052	39.792375	-88.350139

Facility	Scope 1 emissions (metric tons CO2e)	Latitude	Longitude
Vadodara, India	0	22.438352	73.210025
Victoria	17044	28.687473	-96.941459
Victoria, Australia	0	-37.988745	145.104183
Warrington, UK	0	53.406197	-2.533082
Wesseling	1874289	50.83317	6.966976
West Chicago, IL, US	0	41.914009	-88.235828
Bayreuth	0	49.969581	11.603684
East Chicago, IN, US	0	41.634689	-87.454736
Perrysburg, OH, US	0	41.546921	-83.642284

#### 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	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	12854792	<Not Applicable>	
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Electric utility 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 (midstream)	<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 for in Scope 2 market-based approach (MWh)
Americas	6754369	6613533	23031017	15922
Europe	2034526	1959005	156594	1690
Asia Pacific (or JAPA)	110630	116029	7066704	0

#### C7.6

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

By facility

#### C7.6b

(C7.6b) Break down your total gross global Scope 2 emissions by business facility.

Facility	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Akron, OH, US	6828	3960
Allentown, PA, US	2476	2483
Altamira	4495	4668
Astorp, Sweden	20	0
Batu Pahat, Malaysia	1857	1857
Bay City, MI, US	560	843
Bayport - Choate	907504	940807
Bayport - Polyolefins	157988	222221
Bayport - Underwood	248354	282142
Bayreuth	25086	22851
Bedford, VA, US	1286	1950
Bell Moya Pipeline (LA)	221	231
Berre	0	49867
Bornem, Belgium	3222	3037

Facility	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Botlek	483894	494706
Brindisi	66175	68292
Carpentersville, IL, US	493	526
Carrington	24741	0
Castellon, Spain	539	539
Cerkezoy, Turkey	1020	1020
Changshu, China	480	480
Channelview	2536476	2763697
Chennai	474	474
China, TX	5939	8730
Chocolate Bayou - Polymers	33411	58255
Choupique Pipeline (LA)	121	126
Cincinatti Technical Centre	1888	2172
Clinton	455824	300165
Corpus Christi	4164	3163
Crumlin, UK	1187	1187
Dalian	0	5395
Dongguan, China	6211	6215
East Chicago, IN, US	3766	3542
East Java, Indonesia	5932	5931
Edison	1882	1689
Equistar Pipeline	0	0
Europoort, NL	3307	3755
Evansville 1800 Lynch, IN, US	2253	3183
Evansville, Columbia, IN, US	588	831
Evansville, Northbrook, IN, US	6598	9321
Evansville, O'Hara, IN, US	16154	22819
Exeter, OH, US	2176	1266
Fairport Harbor	0	3112
Ferrara	111271	107202
Fos-Caban	65958	67771
Frankfurt	28666	44029
Franklin, TN, US	484	484
Gainsborough, UK	828	828
Geelong	55326	55326
Geneva, OH, US	1205	1127
Givet, France	1051	2890
Gorla, Italy	2996	2697
Grand Junction, TN, US	877	838
Guangzhou/Nansha(BAPG)	9153	9153
Houston Office	1901	3254
Houston Refinery	884124	918628
Jackson	14443	9003
Juarez, Mexico	22	22
Kerpen, Germany	5637	10679
Knapsack	56549	32230
La Porte	424005	424693
Lake Charles	76381	54486
Ludwigshafen	1129	1628
Maasvlakte	476875	477654
Matagorda	216415	174415
Mexico City, Mexico	247	201
Milton Keynes	4265	0
Moerdijk	44507	44889
Morris	660012	283311
Mount Belvieu	4510	7863
Munchsmunster	146511	133458
Newark	184	45
North Canton, OH, US	1291	749
North Kingsville, OH, US	8052	4670
Opplabbeek, Belgium	174	164
Oyonnax, France	161	444
Perrysburg, OH, US	1388	805
Pinda	608	0
Placedo Pipeline (TX)	102	174
Plymouth, IN, US	570	536
Rayong (BAPT)	5308	5308
Rio Claro, Brazil	90	0
Rotterdam Office	300	381
Sabine Pipeline (LA)	123	129

Facility	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Saint-Germain Laval	60	165
San Luis Potosi, Mexico	8351	6813
Seevetal, Germany	383	859
Senai, Malaysia	3916	3916
s'Gravendeel, Holland	4386	4238
Sinnar	3309	3309
Sumare, Brazil	1000	1003
Surplast, Argentina	398	397
Suzhou (BAPS)	12894	12894
Tarragona	77067	24860
Tuscola	0	11968
Vadodara, India	3177	3177
Victoria	26506	46216
Victoria, Australia	2594	2594
Warrington, UK	1019	1019
Wesseling	398849	355665
West Chicago, IL, US	342	330
Mansfield	19289	19468

### 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	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	8015400	7769939	
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 (midstream)	<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>

### C-CH7.8

(C-CH7.8) Disclose the percentage of your organization's Scope 3, Category 1 emissions by purchased chemical feedstock.

Purchased feedstock	Percentage of Scope 3, Category 1 tCO2e from purchased feedstock	Explain calculation methodology
Other (please specify) (Total feedstock mixture)	94	We calculated the scope 3 emissions arising from purchased feedstocks as a portion of the total scope 3 emissions from purchased goods and services, which resulted in a total of 94%. We do not segregate between feedstock types as we consider this to be company sensitive information. The following methodology was used to calculate related scope 3 emissions. Data Quantity (mass and volume) of the goods and services, namely refining and petrochemical feedstocks, additives, chemicals, and catalysts were obtained from our internal management systems. Emission factors Emission factors were sourced from different commercial and public data sources, including ecoinvent, PlasticsEurope, and regional regulatory databases. Methodologies and assumptions CO2e emissions in this category were calculated using an average-data approach, in accordance with the WBCSD/WRI GHG Scope 3 Guidance Document. Primary data was obtained from our internal systems on the quantities of purchased goods and services procured from each region, to which we applied regional emission factors to calculate CO2e emissions.

### C-CH7.8a

(C-CH7.8a) Disclose sales of products that are greenhouse gases.

	Sales, metric tons	Comment
Carbon dioxide (CO2)	0	LyondellBasell does not sell carbon dioxide
Methane (CH4)	0	LyondellBasell does not sell methane
Nitrous oxide (N2O)	0	LyondellBasell does not sell nitrous oxide
Hydrofluorocarbons (HFC)	0	LyondellBasell does not sell hydrofluorocarbons
Perfluorocarbons (PFC)	0	LyondellBasell does not sell perfluorocarbons
Sulphur hexafluoride (SF6)	0	LyondellBasell does not sell sulphur hexafluoride
Nitrogen trifluoride (NF3)	0	LyondellBasell does not sell nitrogen trifluoride

## 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?**

Increased

## 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	29006	Increased	0.11	
Other emissions reduction activities	38672	Decreased	0.16	Although total Scope 1 & 2 GHG emissions increased slightly from 2019 to 2020, LyondellBasell saved 38,672t of CO2 in 2020 through the implementation of energy saving and CO2 reduction initiatives. Major projects included waste heat recovery and flare gas management. Our total scope 1 and scope 2 footprint in 2019 was 23,980,444, with our reduction activities corresponding to 0.16% (38,672/ 23,980,444 = 0.16%).
Divestment	0	No change	0	LyondellBasell did not undertake any divestments in 2020.
Acquisitions	0	No change	0	LyondellBasell did not undertake any acquisitions in 2020.
Mergers	0	No change	0	LyondellBasell did not undertake any mergers in 2020.
Change in output	60597	Decreased	0.2	Due to an altered manufacturing profile of our businesses during the pandemic, changes to the product mix and overall drop in manufacturing volumes resulted in a decrease in overall emissions.
Change in methodology	0	No change	0	n/a
Change in boundary	0	No change	0	n/a
Change in physical operating conditions	186677	Increased	0.7	The altered manufacturing profile of our businesses during the pandemic resulted in a change in the fuel mix used to provide energy to our production processes.
Unidentified	0	No change	0	n/a
Other	0	No change	0	n/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 5% but less than or equal to 10%

### C8.2

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

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	Yes
Consumption of purchased or acquired steam	Yes
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 (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	0	75882106	75882106
Consumption of purchased or acquired electricity	<Not Applicable>	17612	8149855	8167467
Consumption of purchased or acquired heat	<Not Applicable>	0	0	0
Consumption of purchased or acquired steam	<Not Applicable>	0	22086849	22086849
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0	<Not Applicable>	0
Total energy consumption	<Not Applicable>	17612	106118809	106136421

## C-CH8.2a

### (C-CH8.2a) Report your organization's energy consumption totals (excluding feedstocks) for chemical production activities in MWh.

	Heating value	Total MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	65798773
Consumption of purchased or acquired electricity	<Not Applicable>	7152646
Consumption of purchased or acquired heat	<Not Applicable>	0
Consumption of purchased or acquired steam	<Not Applicable>	18690508
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0
Total energy consumption	<Not Applicable>	91641927

## 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	Yes
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	Yes

## C8.2c

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

#### Fuels (excluding feedstocks)

Natural Gas

#### Heating value

HHV (higher heating value)

#### Total fuel MWh consumed by the organization

23345266

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

1697777

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

16516648

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

5130841

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

<Not Applicable>

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

0

#### Emission factor

0.181

#### Unit

metric tons CO2 per MWh

**Emissions factor source**  
API GHG Compendium 2009

**Comment**

---

**Fuels (excluding feedstocks)**

Fuel Gas

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

38973486

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

3541

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

37372152

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

1597793

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

<Not Applicable>

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

**Emission factor**

0.18

**Unit**

metric tons CO2 per MWh

**Emissions factor source**

API GHG Compendium 2009

**Comment**

---

**Fuels (excluding feedstocks)**

Refinery Gas

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

8093228

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

262769

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

7036370

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

794089

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

<Not Applicable>

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

**Emission factor**

0.186

**Unit**

metric tons CO2 per MWh

**Emissions factor source**

API GHG Compendium 2009

**Comment**

---

**Fuels (excluding feedstocks)**

Butylene

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

1494

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

0

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

1494

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

0

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

<Not Applicable>

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

0

**Emission factor**

0.234

**Unit**

metric tons CO2 per MWh

**Emissions factor source**

API GHG Compendium 2009

**Comment**

---

**Fuels (excluding feedstocks)**

Petrol

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

0

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

0

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

0

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

0

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

<Not Applicable>

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

0

**Emission factor**

0.242

**Unit**

metric tons CO2 per MWh

**Emissions factor source**

API GHG Compendium 2009

**Comment**

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**Fuels (excluding feedstocks)**

Distillate Oil

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

563293

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

198330

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

0

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

364963

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

<Not Applicable>

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

**Emission factor**

0.249

**Unit**

metric tons CO2 per MWh

**Emissions factor source**

API GHG Compendium 2009

**Comment**

---

**Fuels (excluding feedstocks)**

Diesel

**Heating value**

---

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

161857

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

18226

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

0

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

143631

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

<Not Applicable>

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

**Emission factor**

0.253

**Unit**

metric tons CO2 per MWh

**Emissions factor source**

API GHG Compendium 2009

**Comment**

---

**Fuels (excluding feedstocks)**

Lignite Coal

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

200800

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

109726

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

0

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

91074

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

<Not Applicable>

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

**Emission factor**

0.353

**Unit**

metric tons CO2 per MWh

**Emissions factor source**

API GHG Compendium 2009

**Comment**

---

**Fuels (excluding feedstocks)**

Coke

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

2143698

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

0

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

2143698

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

0

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

<Not Applicable>

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

0

**Emission factor**

0.348

**Unit**

metric tons CO2 per MWh

**Emissions factor source**

API GHG Compendium 2009

**Comment**

---

**Fuels (excluding feedstocks)**

Pitch

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

843612

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

293392

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

0

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

550220

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

<Not Applicable>

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

0

**Emission factor**

0.276

**Unit**

metric tons CO2 per MWh

**Emissions factor source**

API GHG Compendium 2009

**Comment**

---

**Fuels (excluding feedstocks)**

Hydrogen

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

984806

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

0

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

984806

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

0

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

<Not Applicable>

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

0

**Emission factor**

0

**Unit**

metric tons CO2 per MWh

**Emissions factor source**

API GHG Compendium 2009

**Comment**

---

**Fuels (excluding feedstocks)**

Waste Oils

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

570565

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

0

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

570565

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

0

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

&lt;Not Applicable&gt;

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

0

**Emission factor**

0.204

**Unit**

metric tons CO2 per MWh

**Emissions factor source**

API GHG Compendium 2009

**Comment****C8.2d****(C8.2d) 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	2583761	2583761	0	0
Heat	64841340	64841340	0	0
Steam	8457005	8457005	0	0
Cooling	0	0	0	0

**C-CH8.2d****(C-CH8.2d) Provide details on electricity, heat, steam, and cooling your organization has generated and consumed for chemical production activities.**

	Total gross generation (MWh) inside chemicals sector boundary	Generation that is consumed (MWh) inside chemicals sector boundary
Electricity	2583761	2583761
Heat	54758007	54758007
Steam	8457005	8457005
Cooling	0	0

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

Power purchase agreement (PPA) with a grid-connected generator with energy attribute certificates

**Low-carbon technology type**

Hydropower

**Country/area of consumption of low-carbon electricity, heat, steam or cooling**

Sweden

**MWh consumed accounted for at a zero emission factor**

1690

**Comment****Sourcing method**

Power purchase agreement (PPA) with a grid-connected generator with energy attribute certificates

**Low-carbon technology type**

Hydropower

**Country/area of consumption of low-carbon electricity, heat, steam or cooling**

Brazil

**MWh consumed accounted for at a zero emission factor**

15922

**Comment**

C-CH8.3

(C-CH8.3) Does your organization consume fuels as feedstocks for chemical production activities?

Yes

C-CH8.3a

(C-CH8.3a) Disclose details on your organization's consumption of fuels as feedstocks for chemical production activities.

**Fuels used as feedstocks**

Other, please specify (Total fuel feedstock)

**Total consumption**

45788198

**Total consumption unit**

metric tons

**Inherent carbon dioxide emission factor of feedstock, metric tons CO2 per consumption unit**

0.82

**Heating value of feedstock, MWh per consumption unit**

13.43

**Heating value**

HHV

**Comment**

Feedstock composition is considered to be confidential information, and therefore a total of all feedstock volumes has been provided. The heating value of the feedstock is based on a weighted average of heating values for the total feedstock mix. Please also note that the majority of our feedstock is converted into chemicals and polymer products, rather than combusted, and therefore there are no direct CO2 emissions associated with these products.

C-CH8.3b

(C-CH8.3b) State the percentage, by mass, of primary resource from which your chemical feedstocks derive.

	Percentage of total chemical feedstock (%)
Oil	40
Natural Gas	60
Coal	0
Biomass	0
Waste (non-biomass)	0
Fossil fuel (where coal, gas, oil cannot be distinguished)	0
Unknown source or unable to disaggregate	0

C9. Additional metrics

C9.1

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

C-CH9.3a

(C-CH9.3a) Provide details on your organization's chemical products.

**Output product**

Polymers

**Production (metric tons)**

8979305

**Capacity (metric tons)**

12218614

**Direct emissions intensity (metric tons CO2e per metric ton of product)**

**Electricity intensity (MWh per metric ton of product)**

**Steam intensity (MWh per metric ton of product)**

**Steam/ heat recovered (MWh per metric ton of product)**

**Comment**

Intensity ratios are not published as they are regarded as confidential business information

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**Output product**

High Value Chemicals (Steam cracking)

**Production (metric tons)**

11940495

**Capacity (metric tons)**

12646709

**Direct emissions intensity (metric tons CO2e per metric ton of product)**

**Electricity intensity (MWh per metric ton of product)**

**Steam intensity (MWh per metric ton of product)**

**Steam/ heat recovered (MWh per metric ton of product)**

**Comment**

Intensity ratios are not published as they are regarded as confidential business information

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**Output product**

Methanol

**Production (metric tons)**

1094283

**Capacity (metric tons)**

1443745

**Direct emissions intensity (metric tons CO2e per metric ton of product)**

**Electricity intensity (MWh per metric ton of product)**

**Steam intensity (MWh per metric ton of product)**

**Steam/ heat recovered (MWh per metric ton of product)**

**Comment**

Intensity ratios are not published as they are regarded as confidential business information

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**Output product**

Ethanol

**Production (metric tons)**

144975

**Capacity (metric tons)**

153996

**Direct emissions intensity (metric tons CO2e per metric ton of product)**

**Electricity intensity (MWh per metric ton of product)**

**Steam intensity (MWh per metric ton of product)**

**Steam/ heat recovered (MWh per metric ton of product)**

**Comment**

Intensity ratios are not published as they are regarded as confidential business information

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**Output product**

Other base chemicals

**Production (metric tons)**

17126857

**Capacity (metric tons)**

24585236

**Direct emissions intensity (metric tons CO2e per metric ton of product)**

**Electricity intensity (MWh per metric ton of product)**

**Steam intensity (MWh per metric ton of product)**

**Steam/ heat recovered (MWh per metric ton of product)**

**Comment**

Intensity ratios are not published as they are regarded as confidential business information

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(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?

	Investment in low-carbon R&D	Comment
Row 1	Yes	

C-CH9.6a

(C-CH9.6a) Provide details of your organization's investments in low-carbon R&D for chemical production activities over the last three years.

Technology area	Stage of development in the reporting year	Average % of total R&D investment over the last 3 years	R&D investment figure in the reporting year (optional)	Comment
Unable to disaggregate by technology area	<Not Applicable>	≤20%		Our research and development ("R&D") activities are designed to improve our existing products and processes, and discover and commercialize new materials, catalysts and processes. We are currently investing significantly in further developing sustainable and "circular" solutions such as mechanical and chemical recycling, which minimizes resource use in addition to creating products with an improved carbon footprint

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	No third-party verification or assurance

C10.1a

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

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Reasonable assurance

**Attach the statement**

CDP Climate 2021 Verification.pdf

**Page/ section reference**

Basell Polyolefins UK Ltd: Page 2 LyondellBasell France (Berre): Page 6 Basell Poliolefine Italia: Page 9 Lyondell Chimie France: Page 12 Lyondell Chemie NL: Page 15  
Basell Polyolefin GmbH: Page 20

**Relevant standard**

European Union Emissions Trading System (EU ETS)

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

30

---

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Underway but not complete for current reporting year – first year it has taken place

**Type of verification or assurance**

Limited assurance

**Attach the statement**

**Page/ section reference**

**Relevant standard**

Attestation standards established by AICPA (AT105)

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

100

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## C10.1b

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

**Scope 2 approach**

Scope 2 market-based

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Underway but not complete for current reporting year – first year it has taken place

**Type of verification or assurance**

Limited assurance

**Attach the statement**

**Page/ section reference**

**Relevant standard**

Attestation standards established by AICPA (AT105)

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

100

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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?**

No, we do not verify any other climate-related information reported in our CDP disclosure

## C11. Carbon pricing

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### C11.1

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**(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**

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

EU ETS

**C11.1b**

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**(C11.1b) Complete the following table for each of the emissions trading schemes you are regulated by.**

**EU ETS**

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

30

**% of Scope 2 emissions covered by the ETS**

9

**Period start date**

January 1 2020

**Period end date**

December 31 2020

**Allowances allocated**

3702465

**Allowances purchased**

1362093

**Verified Scope 1 emissions in metric tons CO<sub>2</sub>e**

4272933

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

0

**Details of ownership**

Facilities we own and operate

**Comment**

**C11.1d**

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**(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?**

LyondellBasell complies with emission trading schemes by pursuing the lowest cost solutions. This may involve either minimising internal emissions or purchasing allowances/compliance instruments to satisfy compliance obligations. If allowances allocated to the company exceed the current compliance obligations, allowances are retained for future compliance needs. LyondellBasell has established procedures to ensure compliance with regulatory requirements and reporting, and to monitor deadlines and regulatory updates. We also have systems in place at EU ETS site to ensure timely surrendering of certificates for compliance. LyondellBasell has been involved in industry associations at the national or European level to address the effectiveness of the ETS and to reduce carbon leakage. LyondellBasell has participated in the Clean Development Mechanism (CDM). The company has created a global energy management group, supported by a network of energy management specialists at each manufacturing site to pursue energy reduction measures. European sites also have CO<sub>2</sub> focal points to manage compliance obligations.

Example:

**Situation:** We expect increasing ETS certificate prices due to an increase in the EU 2030 climate targets, leading to higher costs for our energy production.

**Task:** In order to limit the exposure to this carbon price risk, we constantly need to identify and address the energy efficiency at our sites, thereby also reducing our emissions and the cost burden from the ETS.

**Action:** Firstly, we have a dedicated purchasing strategy that hedges against the volatility in market prices to help avoid cost spikes for credits. Secondly, we have established a Carbon Reduction Program that aims to limit the exposure to this carbon price risk and the cost burden from the ETS by reducing the emissions at our sites. We are reducing the GHG emission intensity of our processes through the implementation of process optimisations and technologies. Within this program, we evaluate a number of different reduction opportunities around process optimisation (e.g. heat integration, waste heat to power, flare gas recovery or fuel switch to lower carbon intensive fuels), energy management systems to monitor and control energy streams, or process electrification.

**Results:** We identified mitigation potentials at our site in Wesseling (Germany), which is our largest emitting site in Europe. We ultimately managed to address relevant mitigation potentials at that site, thereby also considerably reducing our exposition to carbon pricing in the EU ETS. In 2020, we reduced annual emissions by 100kt through increased energy efficiency and optimisations in our power plant operations. Based on an average carbon price of 25EUR for 2020, that will help us reduce our ETS compliance costs by 2.5 MM EUR annually.

**C11.2**

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

Yes

### C11.2a

(C11.2a) Provide details of the project-based carbon credits originated or purchased by your organization in the reporting period.

**Credit origination or credit purchase**

Credit purchase

**Project type**

Wind

**Project identification**

CDM Project: 5173 Yichun Xinqing Laobaishan Windpark First Stage 30MW Wind Power Project

**Verified to which standard**

CDM (Clean Development Mechanism)

**Number of credits (metric tonnes CO2e)**

18205

**Number of credits (metric tonnes CO2e): Risk adjusted volume**

18205

**Credits cancelled**

Yes

**Purpose, e.g. compliance**

Compliance

**Credit origination or credit purchase**

Credit origination

**Project type**

Hydro

**Project identification**

CDM Project 8761: Stung Tatay Hydroelectric Project

**Verified to which standard**

CDM (Clean Development Mechanism)

**Number of credits (metric tonnes CO2e)**

795

**Number of credits (metric tonnes CO2e): Risk adjusted volume**

795

**Credits cancelled**

Yes

**Purpose, e.g. compliance**

Compliance

**Credit origination or credit purchase**

Credit purchase

**Project type**

Hydro

**Project identification**

CDM Project 7731: Dapein (1) Hydropower Project in Union of Myanmar

**Verified to which standard**

CDM (Clean Development Mechanism)

**Number of credits (metric tonnes CO2e)**

1304

**Number of credits (metric tonnes CO2e): Risk adjusted volume**

1304

**Credits cancelled**

Yes

**Purpose, e.g. compliance**

Compliance

### C11.3

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

Yes

## C11.3a

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

#### Objective for implementing an internal carbon price

Drive low-carbon investment

#### GHG Scope

Scope 1

#### Application

Company-wide

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

25

#### Variance of price(s) used

Differentiated, evolutionary pricing driven by the specific assessment, e.g., geography, applicable legislation, and timeframe of an investment.

#### Type of internal carbon price

Shadow price

#### Impact & implication

Integrating climate into our business planning is a crucial step in our journey. In 2020, we began discussions around an internal carbon pricing approach and were able to use our approach to evaluate several capital project investment decisions in the European Union. Under this approach, a shadow price for carbon is based on a variety of factors including geography, current and emerging trends, legislation and other factors we consider applicable. We intend to continue to refine our internal carbon pricing approach and to expand its use for evaluation of future key global capital project investment decisions. Going forward, we also intend to use it to support our assessment of potential investments in low-carbon technologies and to evaluate operational efficiencies, especially in markets that already have a carbon price or in regions where a carbon price is expected to emerge.

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## C12. Engagement

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### C12.1

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

Yes, our suppliers

Yes, our customers

### C12.1a

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

**Type of engagement**

Innovation & collaboration (changing markets)

**Details of engagement**

Other, please specify (Collaboration on innovative low carbon products)

**% of suppliers by number**

0.01

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

0.01

**% of supplier-related Scope 3 emissions as reported in C6.5**

0.01

**Rationale for the coverage of your engagement**

LyondellBasell purchases millions of tonnes of feedstock annually, however the number of suppliers is comparatively limited. In order to conduct a trial to evaluate the technical and commercial aspects related to the production of polymers made from renewable feedstocks, collaboration with a single supplier was necessary.

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

Our collaboration with our renewable feedstock partner is supporting the development of the European market for more sustainable polymers and chemicals solutions. An ISO 14040 -44 compliant LCA study demonstrated that our renewable-based polymers delivered a reduction of up to 75% in CO2 footprint compared with their fossil-based equivalent.

**Comment**

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**Type of engagement**

Information collection (understanding supplier behavior)

**Details of engagement**

Collect climate change and carbon information at least annually from suppliers

**% of suppliers by number**

0.01

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

0.01

**% of supplier-related Scope 3 emissions as reported in C6.5**

0.01

**Rationale for the coverage of your engagement**

In 2020, LyondellBasell joined a project coordinated by Cefic, the European Industry Chemical Federation, to develop a methodology to better account for freight-related CO2e emissions. During this project, we engaged with a number of our freight partners to collect CO2e emission data related to the shipment of our products to our customers as a trial to support the development of the methodology. Upon successful completion of the project, we foresee a deployment of this methodology with our freight partners to enable better accounting, and ultimately reduction, of our freight related CO2 emissions.

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

The data collected from our freight partners have allowed us to validate the methodology developed through Cefic to account for freight related emissions. We expect we will be deploying the resulting methodology across our regional operations in 2021 and 2022, and work with our freight partners to lower the emissions linked to our upstream and downstream transportation.

**Comment**

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**Type of engagement**

Compliance & onboarding

**Details of engagement**

Code of conduct featuring climate change KPIs

**% of suppliers by number**

8.6

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

13

**% of supplier-related Scope 3 emissions as reported in C6.5**

1

**Rationale for the coverage of your engagement**

In 2020, we launched our Supplier Code of Conduct, in which we outline our environmental, health, safety, social, governance and ethical expectations for those with whom we do business. As the launch occurred in 2020, we expect that our coverage will increase while we engage with our suppliers to confirm their adherence to our Code.

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

We encourage our suppliers to seek greenhouse gas emission reductions, both in their operations and with their own suppliers.

**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**

Education/information sharing

**Details of engagement**

Share information about your products and relevant certification schemes (i.e. Energy STAR)

**% of customers by number**

70

**% of customer - related Scope 3 emissions as reported in C6.5**

0

**Portfolio coverage (total or outstanding)**

<Not Applicable>

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

We include information on our sustainability and climate change programs and product portfolio in our day-to-day business with our customers. Life cycle assessment studies are one of the elements we share with our customers to demonstrate a sustainability or climate benefit of our products to support our customers' needs and sustainability initiatives. This was notably shown during engagements with our customers on our CirculenRenew product, our polymer product offering made from renewable-based feedstock, using a mass balance approach. Based on customer expectations and requirements, we estimate that we have engaged with 70% of our customer base on sessions to inform them of our climate strategy and lower carbon product portfolio.

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

Sustainability and climate change are key drivers for us to build and strengthen our relationship with our customers. Our product portfolio has supported our customers in reducing emissions throughout the value chain and in progressing against their climate change related targets. Our analysis shows that our CirculenRenew polymers can help our customers in reducing the carbon footprint of polymers by 75% compared with their fossil virgin equivalent.

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**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

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**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 with minor exceptions	LyondellBasell has directly engaged in dialogue with national governments, legislators and trade associations to explain the impact of legislation on its operations and competitiveness, regarding e.g., the future of the EU Emissions Trading System or the introduction of carbon border adjustment measures	As a company operating more than 90 manufacturing sites around the world, LyondellBasell is well placed to evaluate the impact of widely-differing laws and regulations. In Europe, for instance, LyondellBasell is subject to the EU Emissions Trading System, while such a cap and trade system does not exist in the United States. If applied universally and consistently a single, global, market-based cap and trade system could provide the necessary price signal to reduce greenhouse gases emissions at minimum cost, but we recognise this is unlikely to occur in the short to medium term. In the meantime, fair compensation mechanisms should be considered so that producers subject to carbon tax or cap and trade schemes not be penalised against imports from countries where such constraints do not exist. LyondellBasell is therefore watching carefully, and broadly favourable to, the EU proposal to introduce a carbon border adjustment mechanism (CBAM) as part of its July 2021 "Fit for 55" package, designed to accelerate the reduction of GHG emissions by 2030 and place Europe in the trajectory to achieve climate neutrality in 2050. Although by nature some of its manufacturing processes tend to be energy intensive, LyondellBasell manufactures chemicals and materials that significantly contribute to increasing energy efficiency and reducing carbon emissions over the lifecycle of the products and applications in which they are used. This is why LyondellBasell advocates that legislation must, foremost, recognise the contribution of the chemical industry by not selectively subjecting it to obligations or costs that would put it at a competitive disadvantage and, secondly, respect the principles of sound science and technology neutrality, to ensure that the most efficient and innovative solutions prevail
Energy efficiency	Support with minor exceptions	LyondellBasell is actively innovating and applying new energy efficient technologies and products both at our manufacturing facilities and for use by our customers, and we take all opportunities to explain these activities to regulators or legislators, for instance by inviting them to visit our sites.	Reducing the use of feedstocks and resources, in particular energy, is inherent to the chemical industry as it intrinsically improves its competitiveness. Energy efficiency targets driven by legislation can provide additional incentives to continuously improve and reduce the impact on the environment, if they do not overlap with other regulations or impose caps on production or growth. LyondellBasell also supports policies or schemes that promote the development of co-generation facilities, which improve energy efficiency
Regulation of methane emissions	Support with minor exceptions	LyondellBasell is working to reduce the environmental impact of its operations through a variety of initiatives. These initiatives include efforts to reduce emissions, reduce energy and explore how we can reduce emissions in our supply chain by switching to lower carbon transportation solutions. We engage directly and through our trade associations with legislators and regulators at the state and federal level.	LyondellBasell supports regulations that improve the safety of chemical and manufacturing facilities and provide long-term certainty for investment decisions. New regulations or changes to existing regulation must be based on science, balanced, non-repetitive and have benefits that exceed their cost.
Carbon tax	Support with minor exceptions	Given the pivotal role of the chemical industry in addressing the challenge of reducing greenhouse gases emissions, LyondellBasell is very involved at regional (EU, U.S.) levels, both directly and through key trade associations.	As explained above, LyondellBasell and the chemical industry manufacture chemicals and materials that significantly contribute to increasing energy efficiency and reducing carbon emissions over the lifecycle of the products and applications in which they are used. LyondellBasell would therefore consider supporting carbon tax legislation that fully recognises these contributions by not selectively subjecting our industry to overly burdensome or duplicative obligations and costs that would put it at a competitive disadvantage or inhibit innovation. Carbon legislation should also reflect the principles of sound science, should be both technology and material neutral and should be designed to mitigate carbon leakage between geographic regions as described above in the Cap and Trade entry.
Other, please specify (Clean Fuels)	Support with minor exceptions	LyondellBasell is a world leader in the production of fuel ethers and in particular of bio-ETBE, a biofuel used as a blending component in gasoline. As a result of their unique properties, fuel ethers reduce the emissions of CO2 and other air pollutants. LyondellBasell is engaged in direct and indirect advocacy with policy makers in major areas of the world including Europe, Asia and Latin America.	Thanks to our fuel blending components LyondellBasell continues to be committed to improving fuel quality and fuel efficiency, and reduce greenhouse gas emissions associated with transport in our day-to-day life. Over many years our products have successfully contributed to meeting ambitious air quality and emission reduction targets in many cities around the world. Today, these products still offer an immediate and more cost-effective way to reduce emissions globally next to alternative fuel vehicles, such as hydrogen, or electric cars. We are blending first generation biofuels and have also started selling advanced biofuels meeting the latest stringent requirements of the EU Renewable Energy Directive.

**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**

American Chemistry Council (ACC)

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

Consistent

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

The American Chemistry Council (ACC) has adopted a set of Climate Policy Principles. A combination of technology, market-based, and policy solutions will be necessary to reduce GHG emissions and achieve climate goals, such as those of the Paris Agreement. To support climate progress, the ACC calls on the US Congress to enact legislation to: (1) Increase government investment and scientific resources to develop and deploy low emissions technologies in the manufacturing sector; (2) Adopt transparent, predictable, technology- and revenue-neutral, market-based, economy-wide carbon price signals; and (3) Encourage adoption of emissions-avoiding solutions and technologies throughout the economy to achieve significant emissions savings.

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



LyondellBasell employees actively participate on many ACC committees including the Energy Committee. LyondellBasell serves on the boards of ACC and ACC Plastics Division.

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**Trade association**

American Fuel and Petrochemical Manufacturers (AFPM)

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

Mixed

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

The American Fuel and Petrochemical Manufacturers (AFPM) acknowledges climate change is real and is committed to the development of sound policies that enable their members to supply the fuel and petrochemicals that growing global populations and economies need to thrive, and to do so in an environmentally sustainable way. Policies addressing climate change must be: (1) Balanced and measured to improve quality of life, ensuring the long-term economic, energy, and environmental needs of humanity are met; (2) Protective of U.S. competitiveness and prevent the shifting of production, jobs, and emissions from the United States to other countries; (3) Harmonized, preemptive, and economy-wide; (4) Simple and transparent; and (5) Achievable and flexible to adjust as necessary.

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

LyondellBasell employees actively participate on many AFPM committees. Our Executive Vice President Global Intermediates and Derivatives is a member of AFPM's Executive Committee.

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**Trade association**

European Chemical Industry Council (Cefic)

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

Consistent

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

In March 2020, the European Commission presented its proposal for the first EU-wide climate law, which after consultation of the European Parliament and the Council has been finally adopted in June 2021. It enshrines in a binding legislation the EU objective of achieving climate neutrality by 2050. Cefic supports the European Green Deal and Europe's ambition to become climate neutral by 2050. As recognised in the European Green Deal Communication, energy-intensive industries, such as chemicals, are indispensable to Europe's economy, as they supply key value chains. Cefic considers the following conditions essential for the chemical industry's profound transformation:

- A sound and detailed definition of climate neutrality which provides a signal for long-term investments.
- All sectors of the economy need to be on board to reach climate neutrality.
- An enabling framework will be the key to success Energy-intensive industries have called for a Clean Industry Package with concrete actions based on three pillars: the creation of markets for climate-neutral, circular economy products; developing climate-neutral solutions and financing their uptake; and the deployment of the necessary resources. To achieve the transition, our industry will need abundant supplies of low-carbon energy and much more energy than today. The EU Industrial Strategy package should lay the foundations to deploy radical industrial policies to accelerate Europe's industrial transformation. Moreover, while preserving intra-EU competition, EU policies should also equip European industry to compete on a global scale.

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

LyondellBasell is actively participating in Cefic work and involved in numerous committees. Our Senior Vice President, Olefins & Polyolefins, Europe is a member of the Board and of the Executive Committee of Cefic, and chairs its Programme Council Climate Change and Energy, which oversees the development of Cefic positions.

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**Trade association**

National Association of Manufacturers (NAM)

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

Consistent

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

The NAM agrees with the conclusion of the most recent National Climate Assessment by the U.S. Global Change Research Program that the earth is warming and human activities are causing it. Further, our rapidly changing climate poses significant threats to human health, natural resources, biodiversity, infrastructure, food supply, economic growth and many other necessities. The NAM supports the Paris Climate Agreement but believes that more is needed, namely (1) an international, rules-based system that is consistently applied to bind all emitters and ensure a level playing field and (2) a unified U.S. framework that applies economy-wide to all emitters and harmonizes GHG regulation. NAM believes the U.S. should also invest heavily in energy and water efficiency solutions, clean energy R&D, modernization of the electric grid and carbon reduction technologies such as carbon capture, utilization and storage. Finally, NAM believes U.S. domestic policy must work in lockstep with a global framework to avoid carbon leakage.

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

LyondellBasell influences the NAM's climate policies through its participation on their Energy and Environment Committee.

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**Trade association**

Plastics Europe

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

Consistent

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

Plastics improve the quality of life for millions of people across the globe, and are key to accelerating the European transition to a low-carbon circular economy where resources and energy are utilised in the most effective way – but we will not be able to achieve the full potential of these materials if the global challenges linked to their impact when they end-up in the environment are not tackled. Most plastic materials are currently fossil based and are produced from oil or gas. PlasticsEurope, and its members including LyondellBasell, believe that in the long-term, plastics production should be decoupled from fossil feedstock, and that, in the future, the vast majority of plastics will be produced from alternative feedstocks, such as recycled oils or secondary plastics, responsibly sourced biomass, or even CO<sub>2</sub>.

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

LyondellBasell is actively participating in PlasticsEurope work and involved in many committees. Our Senior Vice President, Olefins & Polyolefins, Europe is a member of the Steering Board, and chairs its Strategic Council Climate change and production, which oversees the development of PlasticsEurope positions.

**(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?**

LyondellBasell established a multi-disciplinary work group to develop a global sustainability strategy for the company. This strategy was reviewed and approved by the sustainability steering committee, consisting of senior executives representing all business areas and geographic regions for the company. Imbedded in the global sustainability strategy are five core sustainability focus areas, one of which is climate change. The working group developed policy principles for each of these core sustainability focus areas which were also reviewed and approved by the sustainability steering committee. These principles are incorporated into comprehensive advocacy plans that are being developed for each focus area, including climate change.

**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**

lyb2020sustainabilityreport.pdf  
2020-annual-report.pdf

**Page/Section reference**

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**Content elements**

Governance  
Risks & opportunities  
Emissions figures

**Comment**

**Publication**

In voluntary sustainability report

**Status**

Complete

**Attach the document**

**Page/Section reference**

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**Content elements**

Governance  
Strategy  
Risks & opportunities  
Emissions figures  
Emission targets

**Comment**

**C15. Signoff**

**C-FI**

**(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.**

**C15.1**

**(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.**

	Job title	Corresponding job category
Row 1	SVP, R&D, Technology and Sustainability	Chief Sustainability Officer (CSO)

**SC. Supply chain module**

SC0.0

(SC0.0) If you would like to do so, please provide a separate introduction to this module.

SC0.1

(SC0.1) What is your company’s annual revenue for the stated reporting period?

	Annual Revenue
Row 1	

SC0.2

(SC0.2) Do you have an ISIN for your company that you would be willing to share with CDP?

SC1.1

(SC1.1) Allocate your emissions to your customers listed below according to the goods or services you have sold them in this reporting period.

SC1.2

(SC1.2) Where published information has been used in completing SC1.1, please provide a reference(s).

SC1.3

(SC1.3) What are the challenges in allocating emissions to different customers, and what would help you to overcome these challenges?

Allocation challenges	Please explain what would help you overcome these challenges

SC1.4

(SC1.4) Do you plan to develop your capabilities to allocate emissions to your customers in the future?

SC2.1

(SC2.1) Please propose any mutually beneficial climate-related projects you could collaborate on with specific CDP Supply Chain members.

SC2.2

(SC2.2) Have requests or initiatives by CDP Supply Chain members prompted your organization to take organizational-level emissions reduction initiatives?

SC4.1

(SC4.1) Are you providing product level data for your organization’s goods or services?

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I am submitting to	Public or Non-Public Submission	Are you ready to submit the additional Supply Chain questions?
I am submitting my response	Investors Customers	Public	Yes, I will submit the Supply Chain questions now

**Please confirm below**

I have read and accept the applicable Terms