

UNLOCKING POSSIBILITIES

2022 SUSTAINABILITY REPORT

lyondellbasell
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ABOUT THIS REPORT

This Sustainability Report is for the period January 1 to December 31, 2022 and includes sustainability performance information related to LyondellBasell. We include data from the operations over which we, or one of our subsidiaries, have operational control. The narrative may include our non-operated joint ventures and global activities that take place during the 2023 calendar year. Financial data includes our joint ventures to the extent appropriate under Generally Accepted Accounting Principles in the U.S. The report intends to address the information needs of our stakeholders interested in LyondellBasell's overall sustainability performance.

ABOUT THE COVER

The dandelion, a symbol of resilience, transformation, and growth, is the inspiration for this year's cover. At LyondellBasell, we are unlocking possibilities that support everyday sustainable living, grow our value and enable the true potential of our company.

FORWARD-LOOKING STATEMENTS

The statements in this report relating to matters that are not historical facts are forward-looking statements. These forward-looking statements are based upon assumptions of management of LyondellBasell which are believed to be reasonable at the time made and are subject to significant risks and uncertainties. When used in this report, the words "estimate," "believe," "continue," "could," "intend," "may," "plan," "potential," "predict," "should," "will," "expect," and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain such identifying words. Actual results could differ materially based on factors including, but not limited to, market conditions, the business cyclicity of the chemical, polymers and refining industries; the availability, cost and price volatility of raw materials and utilities, particularly the cost of oil, natural gas, and associated natural gas liquids; uncertainties and impacts related to the extent and duration of the pandemic; competitive product and pricing pressures; labor conditions; our ability to attract and retain key personnel; operating interruptions (including leaks, explosions, fires, weather-related incidents, mechanical failure, unscheduled downtime, supplier disruptions, labor shortages, strikes, work stoppages or other labor difficulties, transportation interruptions, spills and releases and other environmental risks); the supply/demand balances for our and our joint ventures' products, and the related effects of industry production capacities and

operating rates; our ability to manage costs; future financial and operating results; benefits and synergies of any proposed transactions; legal and environmental proceedings; tax rulings, consequences or proceedings; technological developments, and our ability to develop new products and process technologies; our ability to meet our sustainability goals, including the ability to operate safely, increase production of recycled and renewable-based polymers to meet our targets and forecasts, and reduce our emissions and achieve net zero emissions by the time set in our goals; our ability to procure energy from renewable sources; the successful shut down and closure of the Houston Refinery, including within the expected timeframe; our ability to successfully implement initiatives identified pursuant to our value enhancement program and generate anticipated earnings; potential governmental regulatory actions; political unrest and terrorist acts; risks and uncertainties posed by international operations, including foreign currency fluctuations; and our ability to comply with debt covenants and to repay our debt. Additional factors that could cause results to differ materially from those described in the forward-looking statements can be found in the "Risk Factors" section of our Form 10-K for the year ended December 31, 2022, which can be found at www.LyondellBasell.com on the Investor Relations page and on the Securities and Exchange Commission's website at www.sec.gov. There is no assurance that any of the actions, events or results of the forward-

looking statements will occur, or if any of them do, what impact they will have on our results of operations or financial condition. Forward-looking statements speak only as of the date they were made and are based on the estimates and opinions of management of LyondellBasell at the time the statements are made. LyondellBasell does not assume any obligation to update forward-looking statements should circumstances or management's estimates or opinions change, except as required by law.

This report contains time-sensitive information that is accurate only as of the date hereof. Information contained in this release is unaudited and is subject to change. We undertake no obligation to update the information presented herein, except as required by law.

LyondellBasell's reported emissions and expected reductions are based on a combination of measured and estimated data and are based on industry standards and best practices, including the Greenhouse Gas Protocol and guidance from the American Petroleum Institute. Emissions reported are estimates only, and data is subject to change as methods, data quality, and technology improvements occur. LyondellBasell's goals to reduce emissions are good faith efforts based on current relevant data and methodology, which could be changed or refined as we evolve our approach to identifying, measuring and addressing emissions.

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I am convinced we can create substantial enterprise value through leadership in sustainability, which is why we are focused on creating solutions for everyday sustainable living.



FROM OUR CEO

Dear stakeholders,

Looking back on the past year, 2022 was an exciting time to join LyondellBasell as CEO. We built on our company’s strengths toward a more sustainable future by unlocking possibilities. I am convinced we can create substantial enterprise value through leadership in sustainability, which is why we are focused on creating solutions for everyday sustainable living.

We took decisive steps in 2022 to advance our sustainability goals even further and accelerate progress on existing commitments including:

- Addressing the global challenges of plastic waste and climate change, both through company actions and value chain collaborations;
- Continuing to deliver excellent operational safety performance;
- Advancing our progress on diversity, equity and inclusion; and
- Maintaining strong governance and a culture of compliance and integrity.

I am proud to have several external parties recognize our efforts to advance our environmental, social and governance (ESG) performance. In 2022, LyondellBasell achieved

a top quartile ESG rating from Morgan Stanley Capital International (MSCI), the best possible social and governance scores in the Institutional Shareholder Services QualityScores rating, and an EcoVadis Gold Medal. Recognitions like this demonstrate progress, but there is still more to do as we work toward our ambitious goals.

Below is a look at our 2022 sustainability highlights.

Ending Plastic Waste

We see growing global support within our industry, governments, society and among our customers to take action to end plastic waste in the environment. For LyondellBasell, making progress in this area involves developing and delivering circular and sustainable solutions.

In 2022, we took steps to increase our plastics recycling capacity to tackle the challenge of plastic waste and make progress on our goal to produce and market at least 2 million metric tons (MMT) of polymers from recycled or renewable-based sources annually by 2030. Since 2019, we have produced and marketed more than 175,000 metric tons of these polymers.

To deliver sustainable solutions and meet growing customer and societal demand for circular polymers, we established our Circular and Low Carbon Solutions (CLCS) business.

This will allow LyondellBasell to accelerate growth of our *Circulen* product portfolio of recycled and renewable-based polymers, while developing and implementing scalable, low carbon technologies.

CLCS has made early moves to grow our company’s global footprint for plastics recycling, with strategic collaborations announced in China, Germany and India. We also announced our decision to move forward with the engineering phase to build an advanced recycling plant with our proprietary *MoReTec* technology at our site in Wesseling, Germany. Subject to a final investment decision expected in 2023, this will be our first commercial-scale, advanced recycling facility, with an expected start-up by the end of 2025.

Collaboration with brand owners, our customers, partners and suppliers to deliver new sustainable solutions from our *Circulen* portfolio of polymers enabled multiple successes in 2022. Through our collaboration with Röchling Medical, we created eye drop containers sourced from renewable feedstocks (*CirculenRenew*). We helped restaurant chain Wendy’s with their plans to move from lined paper cups to clear plastic cups sourced from advanced recycled feedstock (*CirculenRevive*). Additionally, we worked with sports equipment specialist TSL to design an innovative snowshoe with mechanically recycled content (*CirculenRecover*).

As you can see, advancing circular solutions to meet the global challenge of plastic waste requires engagement and collaboration across the value chain. This is why we were a founding member of the Alliance to End Plastic Waste, and have made meaningful investments in the venture capital funds Closed Loop Partners and Infinity Recycling, and in the Houston Recycling Collaboration.

Beyond these initiatives, we also remain anchored to strong operational standards. We are committed to zero pellet loss to the environment and are diligent in controlling plastic pellet loss from our operations and supply chain.

Taking Climate Action

In December 2022, we positioned ourselves to be an industry leader in greenhouse gas (GHG) emissions reduction. We announced new interim targets aligned with science-based guidance to reach net zero scope 1 and scope 2 emissions by 2050. Our target is to reduce our absolute scope 1 and 2 emissions 42% by 2030 relative to a 2020 baseline, a step up from our previous commitment of 30%. We have also now committed to reduce scope 3 emissions by 30% within the same timeframe. Additionally, PwC performed a limited assurance engagement over our 2022 total energy consumption and scope 1 and scope 2 emissions.

I am proud to share we made significant progress in advancing our goal to procure a minimum of 50% of our electricity from renewable sources by 2030. In 2022, we entered into eight renewable energy power purchase agreements (PPAs) in the U.S. and Europe. In March 2023, we announced five additional renewable energy PPAs. We estimate these PPAs will reduce our annual

scope 2 emissions by more than 1 MMT. The previously announced shutdown of our Houston refinery will also lower annual scope 1 and 2 emissions by more than 3 MMT. Together, these actions will account for GHG emission reductions of more than 15% of our scope 1 and 2 baseline. The exit from our refining business will also lower annual scope 3 GHG emissions by 40 MMT.

Our actions are helping to address the challenge of climate change, while creating value driven by increasing customer demand for materials with a lower carbon and energy footprint.

Supporting a Thriving Society

I firmly believe our talented and passionate workforce is a key driver that will enable us to make progress on our sustainability ambitions. We have a culture that is focused on safety, looking out for one another, continuous improvement and operational excellence.

We continue to be relentless in our pursuit of achieving GoalZERO safety performance, and I am extremely proud of our 2022 occupational safety results. Our Total Recordable Injury Rate was 0.12, a record low performance and top decile for our industry.

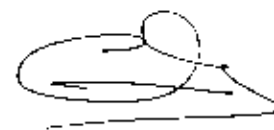
In addition to focusing on safety, we further evolved our organizational structure to foster even greater accountability, operational excellence, business agility and team empowerment. Our reshaped organization now has a more diverse leadership team, with women comprising 22% of all senior leadership positions as of the end of 2022 and 40% of my direct reports as of February 2023.

A more diverse and inclusive leadership will inject the kind of insightful perspectives and experiences we need to solve tomorrow's global challenges. These results mark progress toward our diversity, equity and inclusion goals to achieve gender parity globally, as well as grow the number of underrepresented senior leaders in the U.S. to reflect the general population by 2032. We also recognize there is still more work to be done and will continue to pursue improvement in this area.

I look forward to reporting on our progress as we further our work to retain, attract and develop a talented workforce and elevate our collective performance to advance our leadership position in the market.

Unlocking Possibilities

In 2022, we accelerated our momentum to build circular and low carbon solutions, meet our GHG emissions reduction goals and support a thriving society. As we go forward, we have an unprecedented opportunity to build on our company's rich history of technology and innovation to shape a more sustainable world. I am excited about our future and our ability to unlock possibilities as we continue on this journey.



Peter Vanacker
Chief Executive Officer

INTERVIEW WITH OUR CHIEF SUSTAINABILITY OFFICER ANDREA BROWN

Q: What have been some of the biggest drivers of change impacting LyondellBasell's sustainability efforts over the past year?

A: Our biggest shift has been increasingly viewing sustainability as an opportunity rather than a risk. More than ever, we are putting sustainability at the heart of how we can create more value moving forward. That's more value for our customers, our shareholders, our employees, and society. We have increased our level of ambition and reoriented the company around achieving ambitious goals with the new structures we have put in place. We realize these changes create an opportunity to be ahead of the curve, gain early mover advantage in the market and help shape the future rather than react to it.

Q: How is LyondellBasell aligning its core business strategy with its sustainability strategy?

A: We used to talk about our sustainability strategy and our corporate strategy as two separate items. However, now we have pulled the sustainability strategy into our core business strategy as one of the key pillars. We believe this move will help drive value for the company moving forward. This means sustainability is now 'built-in' and not a 'bolt-on', which is a significant shift for our company. In tangible



More than ever, we are putting sustainability at the heart of how we can create more value moving forward. That's more value for our customers, our shareholders, our employees, and society.



terms, this means everybody in the company has a role to play in helping to achieve our overall sustainability goals and deliver value for our company.

Q: What do you think are the biggest achievements for sustainability at LyondellBasell over the last year?

A: We have made significant progress in creating the best structures for success. We have set up a new strategic business unit focused on accelerated delivery of circular and low carbon solutions, with Yvonne van der Laan as executive vice president. This structural change will help us be more agile and focused on delivering value from our portfolio of sustainable solutions. We also have a new unit within our business, dedicated to delivering the reductions we need to meet our 2030 and net zero scope 1 and scope 2 emissions targets. In December of 2022, we accelerated our GHG emissions reduction targets and established a scope 3 target, which is aligned with the best available science. We have signed the Letter of Commitment to the Science-Based Targets initiative, and are seeking validation of our 2030 goals. It's a significant and forward-leaning step for

LyondellBasell and one that we believe puts us at the forefront of our industry.

We are also now in our second year of tying our short-term compensation incentives to our ESG performance metrics, of which 20% is safety performance and 10% is progress aligned to our sustainability efforts including our GHG reduction goals and our goal to produce and market at least 2 million metric tons of recycled and renewable-based polymers annually by 2030.

In short, we have put in place the necessary structures to lead and deliver. Outside of the company, these changes are not always visible, but the actions are important to our future success in delivering value from sustainability to our stakeholders.

Q: How are you accelerating the circular economy?

A: As a leading polymer producer, we want to make sure we are keeping valuable materials in use for as long as possible and fostering a circular economy. We want to ensure plastics continue to enable greater sustainability across so many challenges - from helping to avoid food waste to being essential components

in the energy transition. We are finding new opportunities to access waste feedstocks, developing new partnerships to expand mechanical recycling and developing game-changing advanced recycling technology that will take hard-to-recycle plastic waste and turn it into feedstock for new polymer materials. Together, these activities will drive value and address the growing demand we see in the market for circular and low carbon solutions.

Q: From your perspective as Chief Sustainability Officer, how does LyondellBasell view its role and responsibility to create a more sustainable world?

A: As a large global company producing materials millions of people around the world use in everyday living, we have an important role to play. The polymers we produce are used in applications such as food packaging and vital medical supplies, and in applications that enable the energy transition such as wind turbines, solar panels, and lightweight parts that improve vehicle efficiency. We view our role as a fundamental solution provider who can unlock possibilities today and for future generations.

2022 SUSTAINABILITY HIGHLIGHTS

0.12

Total Recordable Injury Rate (TRIR), a record low performance and top decile for our industry

4 MILLION+

safe work hours achieved at 5 manufacturing sites

1 MILLION+

safe work hours achieved at 21 manufacturing sites

¹ Data is based on Level 2+ incidents. We classify incidents on scale of 0 to 5, with Level 5 having the highest impact.

² Relative to a 2020 baseline.

³ Million metric tons.

⁴ Based on 2020 procured levels.

55

sites achieved GoalZERO performance with zero injuries and zero process safety and environmental incidents¹

4

new plastic waste recycling projects and ventures announced to grow our mechanical recycling footprint and increase access to feedstock through advanced sorting

175,000

metric tons of recycled and renewable-based polymers produced and marketed since 2019

FIRST

commercial scale, single-train advanced recycling plant using LyondellBasell's proprietary *MoReTec* technology progressed to engineering

INCREASED

our greenhouse gas emissions reduction target for scope 1 and 2 from 30% to 42%, and established a 2030 scope 3 emissions reduction target of 30%²

LIMITED ASSURANCE

engagement over our 2022 total energy consumption and scope 1 and scope 2 emissions performed by PwC

50%+

of our goal to procure at least half of our electricity from renewable sources by 2030 achieved, which will reduce our scope 2 emissions by nearly 1 MMT³ annually when the projects are operational⁴

40%

of the Chief Executive Officer's direct reports are women, as of February 2023

17,000+

diversity, equity and inclusion training hours completed by 6,200 employees

6

total Employee Networks, with the addition of our Global Latin and Global Asian/Pacific Islander networks in 2022

\$11 MILLION

in charitable investments globally through 1,800 grants

OUR SUSTAINABILITY APPROACH AND GOALS

LyondellBasell is a leader in the global chemical industry creating solutions for everyday sustainable living.

Through advanced technology and focused investments, we are enabling a circular and low carbon economy.

Across all we do, we aim to unlock value for our customers, investors and society.

We have the potential—and responsibility—to use our scale and reach to make a positive impact across our value chains. That’s why we are working to deliver meaningful progress to address some of the world’s most pressing challenges such as helping end plastic waste in the environment, taking climate action and supporting a thriving society for our employees, the communities where we operate and for the people who depend on our products.

ENDING PLASTIC WASTE

2MMT¹+

of recycled and renewable-based polymers will be produced and marketed annually by 2030

FOR EVERY \$

we invest in venture funds that address the plastic waste challenge, we help catalyze another 5 dollars from co-investors

ZERO

plastic pellet loss to the environment from our facilities

¹ Million metric tons.

² Our 2050 net zero goal includes scope 1 and 2 emissions.

³ Relative to 2020 baseline.

⁴ Relative to 2020 baseline.

⁵ Based on 2020 procured levels.

TAKING CLIMATE ACTION

NET ZERO

greenhouse gas emissions from operations by 2050²

42%

absolute scope 1 and 2 greenhouse gas emissions reduction from operations by 2030³

30%

absolute scope 3 greenhouse gas emissions reduction by 2030⁴

50%

minimum of electricity procured from renewable sources by 2030⁵

SUPPORTING A THRIVING SOCIETY

ZERO

incidents, injuries and accidents

ACHIEVE

gender parity in senior leadership globally by 2032

INCREASE

the number of people from underrepresented groups in U.S. senior leadership roles to reflect the general population ratio by 2032

ASSESS

a minimum of 70% of our key suppliers globally using sustainability criteria by 2025

RECOGNITION



FTSE4Good

LyondellBasell was named to the FTSE4Good Index Series. Created by the global index and data provider FTSE Russell, the FTSE4Good Index Series is designed to measure the performance of companies demonstrating strong ESG practices.

The FTSE4Good indexes are used by a wide variety of market participants to create and assess responsible investment funds and other products.



Global supply chains, financial institutions and public organizations use EcoVadis to monitor and improve the sustainability performance of their business and trading partners.

In 2022, LyondellBasell's rating was in the top 9% of companies in our industry rated by EcoVadis.



MSCI ESG Ratings measure a company's management of financially relevant ESG risks and opportunities and how well they manage those risks relative to peers.

In 2022, LyondellBasell received a rating of A, on a scale of CCC to AAA, with AAA being the best.



CDP is a not-for-profit charity that runs a global disclosure system for investors, companies, cities, states and regions to manage their environmental impacts. The world's economy looks to CDP as the gold standard of environmental reporting with the richest and most comprehensive dataset on corporate and city action.

LyondellBasell received a score of B for our 2022 response to the Climate Change questionnaire and a B- for Water Security. CDP scores range from D- to A, with A being the best. Our CDP disclosures can be found on our website at www.lyondellbasell.com under Sustainability Reporting.



OUR BUSINESS

LyondellBasell is a leader in the global chemical industry creating solutions for everyday sustainable living.

Through advanced technology and focused investments, we are enabling a circular and low carbon economy. Across all we do, we aim to unlock value for our customers, investors and society. As one of the world's largest producers of polymers and a leader in polyolefin technologies, we develop, manufacture and market high-quality and innovative products for applications ranging from sustainable transportation and food safety to clean water and quality healthcare.

More information about LyondellBasell can be found in our [2022 Annual Report](#) on Form 10-K for the year ended December 31, 2022 ([2022 Form 10-K](#)).

ABOUT LYONDELLBASELL

100+

countries where our products are sold

21

countries with manufacturing sites and joint ventures

#1

largest producer of polyethylene (PE) and polypropylene (PP) in Europe

#1

producer of PP compounds globally

6,000

patents and patent applications worldwide

#1

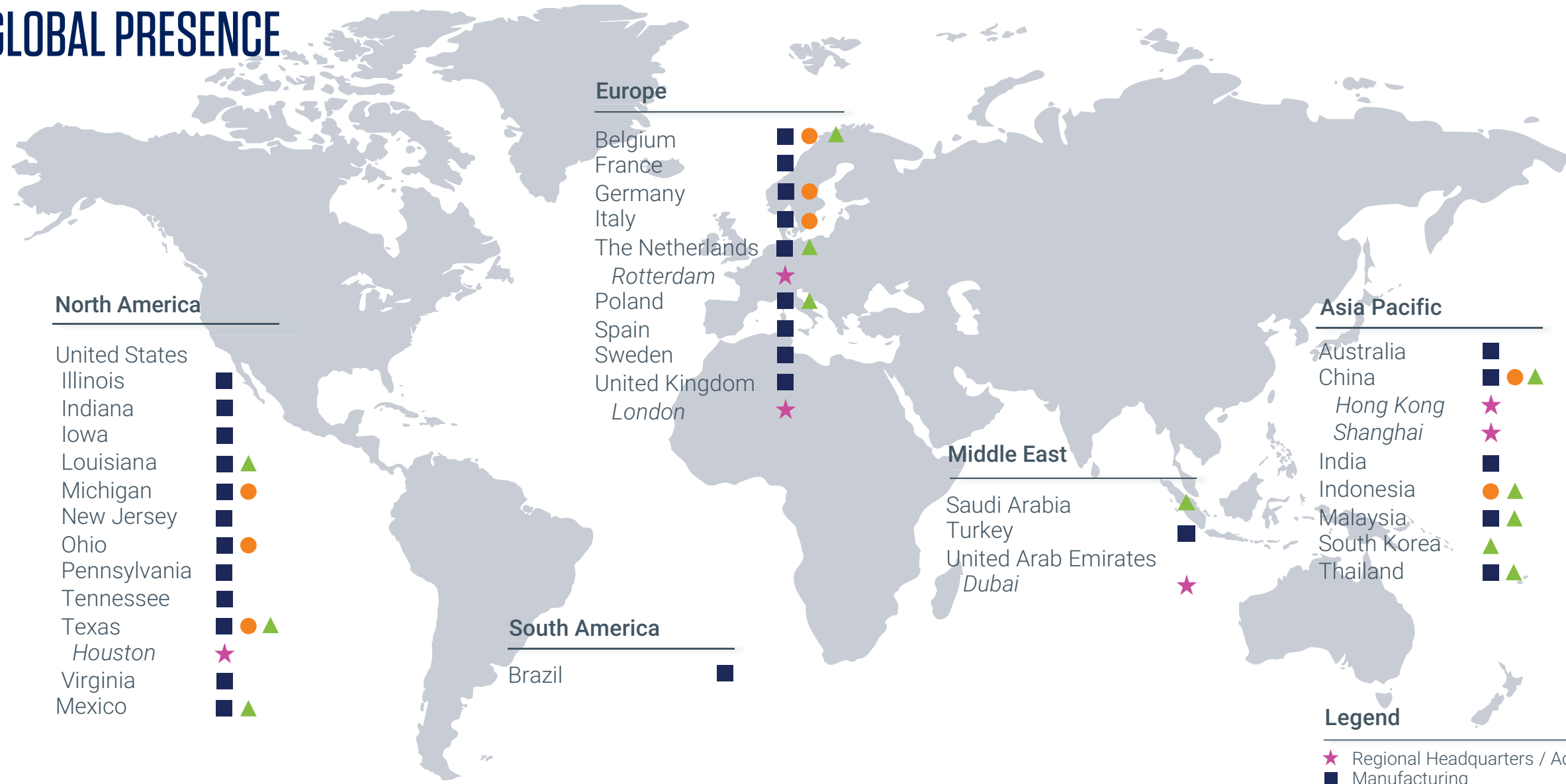
polyolefin licensing globally

#2

largest producer of propylene oxide (PO) worldwide



GLOBAL PRESENCE



Note: Map data as of December 31, 2022.



OUR EMPLOYEES

2022	Men	Women	Undisclosed	Total
All employees	15,670	3,777	4	19,451
Full-time	15,513	3,551	4	19,068
Part-time	157	226	0	383
Permanent	15,428	3,726	4	19,158
Temporary	242	51	0	293

	U.S./Canada	Europe	Latin America (including Mexico)	Asia Pacific	Middle East & Africa
All employees	8,282	8,363	985	1,790	31
Full-time	8,264	8,000	985	1,788	31
Part-time	18	363	0	2	0
Permanent	8,268	8,092	977	1,790	31
Temporary	14	271	8	0	0

Unless otherwise stated, employee data in this report is based on full-time and part-time employees as of December 31, 2022. Part time is based on employment percentage (capacity utilization level). Anything less than 100% is reflected as part time. More data on our employees can be found in the Diversity, Equity and Inclusion section of this report and in the GRI Index. Our EEO-1 data is reported annually on our website at www.lyondellbasell.com under Sustainability Reporting.

2022 RESILIENT VALUE GENERATION



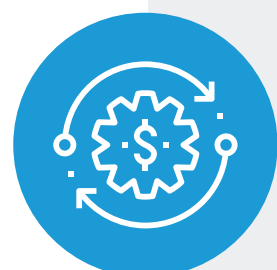
\$3.9B
Net Income

\$4.1B
Net Income
excluding identified items



\$11.81
Diluted EPS

\$12.46
Diluted EPS
excluding identified items



\$6.3B
EBITDA

\$6.5B
EBITDA
excluding identified items

Reconciliations for non-GAAP financial measures can be found on [page 98](#) of this report.

2022 STRATEGIC FOCUS ON VALUE

FOCUS

OUTCOME



Core values of **safety**
cost management
and **operational**
excellence

- 50% lower incidence rate vs. 2021
- 1.7% higher cash fixed costs vs. 2021 (well below inflation)
- Agile responses to changing market conditions



Portfolio optimization
and **leading market**
positions

- Resilient cash generation
- Sale of Australian polypropylene business
- Exiting the Refining business



Leadership in
Circular and Low
Carbon Solutions

- Building global feedstock supply
- Growing *Circulen* sales volumes
- Adding renewable power capacity
- Increased greenhouse gas emissions reduction goals



Cultural shift to
prioritize value
over a singular
focus on cost

- Targeting \$750 million recurring annual EBITDA by the end of 2025 from value enhancement program

MATERIALITY: IDENTIFYING WHAT MATTERS MOST

In 2022, we updated our materiality assessment using a third party to engage a broad range of stakeholders from within and outside our company.

We heard from employees, investors, key suppliers, customers and peers, and engaged in dialogue with local community members and non-governmental organizations (NGOs) to gain a broad perspective. We carried out a double materiality assessment consistent with our past approach and in keeping with the upcoming EU Corporate Sustainability Reporting Directive (CSRD). This approach looks at the risks and opportunities influencing our financial performance and long-term enterprise value (financial materiality), as well as the ways we impact the economy, environment and society (impact materiality) in the short, medium and long term.

We revised our material issues list to increase alignment with the draft CSRD and principles of the Global Reporting Initiative (GRI), Sustainability Accounting Standard Board and the United Nations (UN) Sustainable Development Goals.



We conducted confidential online surveys and interviews, asking survey participants to rate the importance of the issues on our material issues list based on a double materiality approach. The internal and external stakeholders interviewed were asked to assess the most important issues today for our company from their perspective, evaluate the company's current performance in these areas and identify the issues whose importance might become high or very high in the next decade.

Results of the online surveys and interviews were compiled, structured and analyzed using an audit-ready data methodology. The LyondellBasell Executive Committee and members of the Sustainability, Legal and Finance teams validated the results.

The results

Our materiality assessment showed that GHG emissions and climate change risks and management; product design and lifecycle management; ethical corporate behavior; harmful substances management; employee health, safety and well-being; product and service quality; and safety of customers and end consumers are the top issues that have the greatest impact on LyondellBasell and where LyondellBasell has the greatest impact on society and the environment.

These issues are aligned with our strategic objectives, sustainability goals, and our Code of Conduct. We have set appropriate targets to measure performance and processes to report on our progress.

2022 MATERIALITY ASSESSMENT RESULTS

Representation of results based on a combined score of Impact materiality and Financial materiality in order of importance





ENDING PLASTIC WASTE

BUILDING A CIRCULAR ECONOMY

Plastics are essential in providing solutions to tomorrow's challenges. As lightweight, hygienic and durable materials, they play a vital role in products used around the globe, every day. Innovative plastic materials help to keep food fresh longer so it can be safely stored and transported long distances, reducing food waste. These materials also provide safe, high-quality solutions for healthcare. Plastics are key to the energy transition, from the latest automotive components that enable vehicle lightweighting, to integral components for wind turbines and solar panels.

Unfortunately, the mismanagement of plastic waste has reached a tipping point. Society, governments and industry are accelerating efforts to close the loop and prevent plastic leakage to the environment, keeping plastics circulating in the economy through recycling and reuse. We believe circularity is critical to helping end plastic waste, and it also offers strong economic, social and climate benefits.

¹<https://ellenmacarthurfoundation.org/topics/plastics/overview>



According to the Ellen MacArthur Foundation,¹ achieving a circular economy for plastics by 2040 has the potential to reduce the annual volume of plastics entering our oceans by 80%, reduce GHG emissions by 25%, generate a savings of \$200 billion per year, and create 700,000 net additional jobs.¹

LyondellBasell is leading change, fostering innovative products and technologies that will unlock a circular and low carbon economy. In September 2022, we announced our new Circular and Low Carbon Solutions business to deliver on our ambition to produce and market at least 2 million metric tons of recycled and renewable-based polymers annually by 2030. This goal represents approximately 20% of our global sales of PE and PP in 2022.

The role of public policy

Effective public policies are essential to address the plastic waste challenge and advance a circular economy. We support legislation and policy to:

- Advance waste management systems, infrastructure and recycling standards.
- Increase the reuse and recycling of plastic.
- Support the introduction of new recycling technologies needed to complement existing mechanical recycling technologies.
- Strengthen demand for recycled plastics.
- Promote the use of renewable-based plastics.
- Inform consumers and incentivize responsible consumer behavior to recycle and reduce plastic waste.

OUR GOALS

- Produce and market at least 2 million metric tons of recycled and renewable-based polymers annually by 2030
- For every dollar we invest in venture funds that address the plastic waste challenge, we help catalyze another five dollars from co-investors
- Zero loss of plastic pellets to the environment from our operations

OUR APPROACH

- Expand our recycling capacity globally
- Accelerate the development and implementation of scalable recycling technologies, including our advanced recycling technology, *MoReTec*
- Optimize the value chain for circularity by building integrated regional hubs to access and supply plastic waste feedstock
- Invest along our value chain to become a full-solution provider for customers and brand owners
- Grow our *Circulen* portfolio of recycled and renewable-based products
- Catalyze investments from venture funds' partners to increase the recovery and recycling of plastic and accelerate technology and other solutions to end plastic waste
- Support effective policies and infrastructure development to improve plastic waste management and recycling through engagement with governments and industry peers

OUR GOAL: PRODUCE AND MARKET AT LEAST 2 MILLION METRIC TONS OF RECYCLED AND RENEWABLE-BASED POLYMERS ANNUALLY BY 2030

Achieving this ambitious goal will require a range of actions to secure access to plastic waste feedstock and build our capacity to produce more recycled and renewable-based products. Our new Circular and Low Carbon Solutions business is focused on securing feedstock supply, growing our recycling footprint and developing scalable technologies to grow our *Circulen* portfolio of products.



Circulen Recover: Products made from plastic waste through a **mechanical recycling** process. This type of recycling upgrades plastic waste into usable materials through mechanical processes including sorting, washing, grinding, melting and forming new pellets. The resulting polymers can also be blended or compounded with traditional fossil-based products, allowing us to deliver high-quality polymers with an optimal balance of performance characteristics and mechanically-recycled content. These polymers can be used in a wide variety of industrial, household and consumer product applications.



Circulen Revive: Products made using an **advanced recycling** process to convert plastic waste back to its molecular level, which is then used as a feedstock in our conventional

production processes to produce new polymers. A broad range of plastics can be recycled using this process including hard-to-recycle items such as mixed materials, composites, multilayer and flexible plastics. The advanced recycled feedstock is mixed with conventional feedstocks in our process, and allocated to *Circulen Revive* products using a mass balance approach certified according to the International Sustainability and Carbon Certification (ISCC) PLUS standard. These polymers can be used in highly regulated applications such as food contact and healthcare.



Circulen Renew: Products made from **renewable feedstocks** derived from bio-based wastes and residual oils, such as used cooking oils. These feedstocks are used in our conventional production processes along with conventional feedstocks, and are allocated to *Circulen Renew*

products using an ISCC PLUS-certified mass balance approach. The use of renewable feedstocks offers a lower carbon footprint compared to fossil-based feedstocks. These polymers can also be used in highly regulated applications such as food contact and healthcare.

Expanding our mechanical recycling capacity globally

In 2022, we took steps to boost our mechanical recycling capacity while supporting the development of plastics recycling infrastructure in India and China. With these steps, our mechanical recycling footprint will encompass joint ventures in Europe, India and China.

In India, we announced plans to form a joint venture with Shakti Plastic Industries, India's largest plastic scrap recycler and waste collection company, to build and operate a fully automated mechanical recycling plant. The plant is intended to process rigid packaging post-consumer waste



SOURCE: SAMSONITE

and produce 50,000 metric tons of recycled PE and PP per year, equivalent to the single-use plastic waste produced by 12.5 million people. Our concept is that the new facility will become the largest mechanical recycling plant in India with an estimated start at the end of 2024. LyondellBasell will market the recycled products produced by this joint venture adding volume to its *CirculenRecover* range of existing PE and PP materials to help meet increasing demand by converters and brand owners in India for recycled polymer materials.

In China, we announced plans to form a joint venture with Genox Recycling to build a plastics recycling plant in Zhaoqing, Guangdong Province. Genox Recycling is a leading manufacturer for integrated service providers of the solid waste treatment industry in China. This facility has a planned start-up date in 2023 and will use mechanical recycling technology to process post-consumer PE and PP waste and produce new polymers sold under the LyondellBasell *CirculenRecover* product portfolio.

LyondellBasell is currently a joint venture partner with Veolia in Quality Circular Polymers (QCP), an industry-leading mechanical recycling company with a production capacity of 55,000 metric tons per year. The QCP site in Geleen, the Netherlands, produces high-quality polymers from post-consumer plastic waste. Both pre-consumer and post-consumer waste are processed at the QCP Blandain, Belgium, site.

Implementing advanced recycling technology at commercial scale

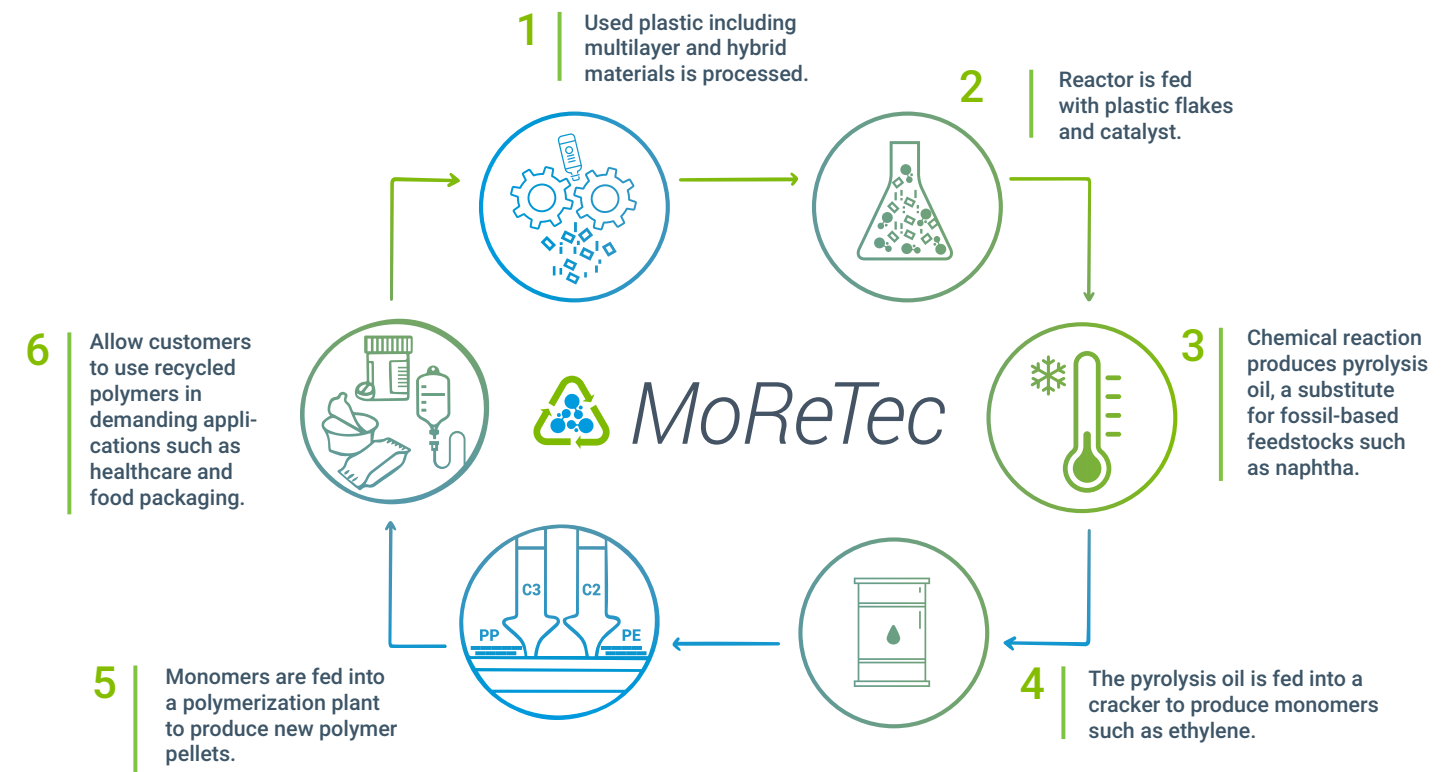
We began focusing on advanced recycling in 2017 as a complementary solution to mechanical recycling because it can address hard-to-recycle plastics that end up in incineration or landfill's. We collaborated with Germany's Karlsruhe Institute of Technology (KIT) to develop our proprietary *MoReTec* technology, which uses a catalyst to improve the breakdown of plastic waste. This technology allows us to convert post-consumer plastic waste into pyrolysis oil and pyrolysis gas for use in our crackers as feedstock for the production of new polymer materials.

The differential advantage of *MoReTec* technology is the combination of scale with leading energy efficiency and a lower GHG footprint, compared with other advanced recycling technologies. The technology's innovative process maximizes the plastic recycling rate while minimizing waste and fuels. In the future, opportunities for the process to be powered by renewable electricity will further reduce the carbon footprint of this technology.

The start-up of our pilot plant in Ferrara, Italy, in 2020 and its expansion in 2021 were important milestones as we improved the efficiency and economics of the technology.

In 2022, we announced plans to move forward with the engineering phase to build a commercial-scale advanced recycling plant

OUR ADVANCED RECYCLING TECHNOLOGY





using our *MoReTec* technology at our site in Wesseling, Germany. Pending a final investment decision in 2023, the start-up of the plant is planned for the end of 2025 with a capacity to consume 50,000 metric tons of plastic waste per year. A material part of the feedstock will be provided by Source One Plastics, our joint venture with 23 Oaks Investment. (See “Investing upstream to secure access to plastic waste feedstock” below.)

Offering renewable-based polymers globally

In 2022, we continued to offer PP and PE with mass balance certificates or measurable carbon-14 content from renewable feedstocks, following our introduction of these polymers at commercial scale in 2021. The renewable feedstocks can be used in our existing manufacturing process. They are also ISCC PLUS-certified as sustainably sourced and not in competition with the food chain. The renewable feedstock is produced from 100% bio-based waste and residues, such as used cooking oils. These polymers offer a lower carbon footprint compared with fossil-based polymers, are manufactured in Europe and the U.S. and marketed globally under the *CirculenRenew* brand.

Investing upstream to secure access to plastic waste feedstock

We are also investing upstream in state-of-the-art sorting units to secure access to plastic waste feedstock, with facilities planned in the U.S. and Germany.

In 2022, we formed a joint venture with 23 Oaks Investments to build an energy-efficient, advanced plastics sorting facility in Germany. Using renewable energy from wind and biomass, the new unit is designed to process the amount of plastic packaging waste generated by approximately 1.3 million German people

per year. This waste is not recycled today and is mostly incinerated. The Source One Plastics facility will produce processed waste, providing a material part of the feedstock for the advanced recycling plant planned at our Wesseling site using our proprietary *MoReTec* technology.

We also signed an agreement with Cyclyx International and ExxonMobil to advance the development of a plastic waste sorting and processing facility in the greater Houston area. The new facility will address a critical missing link in the plastic waste supply chain by connecting community recycling programs to new and more advanced recycling technologies that have the potential to take a much wider variety of plastic materials. With a designed capacity of 150,000 metric tons of mixed plastic waste and commercial start-up expected in 2024, the Cyclyx Circularity Center will be unique among plastic recovery facilities, producing feedstock for both mechanical and advanced recycling. The center will leverage new technologies to analyze plastics based on their composition and sort them according to customer specifications for their highest and best reuse.

LyondellBasell, Cyclyx and ExxonMobil are members of the Houston Recycling Collaboration, a collaboration that brings together government, industry and the community to significantly increase Houston’s plastics recycling rate and help establish the city as a leader for both mechanical and advanced recycling processes. The Houston Recycling Collaboration announced the launch of its first specific project, a new plastic collection program at the Kingwood Recycling Center expanding the materials accepted for recycling to include nearly all plastics. The program launched on December 10, 2022, and collected 3,900 pounds of plastic waste in the first weekend.

Collaborating across the value chain to grow our *Circulen* product offering

We entered into a long-term supply agreement with Envision Plastics to purchase mechanically recycled high-density polyethylene post-consumer resin (HDPE PCR) for use in *CirculenRecover* products in North America.

The HDPE PCR is made from curbside-collected, post-consumer food and beverage containers and is especially unique because the U.S. Food and Drug Administration allows it to be used for direct food contact. *CirculenRecover* polymers include a range of formulated single pellet solutions, combining fossil-based resin with PCR, that can be used in a wide variety of applications.

Innovating solutions for food-grade recycled PP

PP is the most widely used polymer in food packaging, but closing the loop on food-grade PP is a challenge. In 2022, LyondellBasell joined NEXTLOOPP, an initiative that brings together more than 40 major industry players to develop circular food-grade recycled PP from post-consumer packaging. NEXTLOOPP is able to close the loop on PP by using a combination of cutting-edge technologies, developed by Nextek Ltd. It does this by separating food-grade PP from the rest, and decontaminating the polymer. Following outstanding results of its innovative tracer-based sorting trials, Nextek Ltd. recently started production trials of food-grade compliant recycled PP.

In 2022, LyondellBasell joined NEXTLOOPP, an initiative that brings together more than 40 major industry players to develop circular food-grade recycled PP from post-consumer packaging.



SUCCESSFUL COLLABORATIONS PROVIDING A NEW PURPOSE FOR PLASTIC WASTE

GIVING WALLS A GREEN COAT IN CHINA

LyondellBasell and Nippon Paint China, a top household paint brand among Chinese consumers, announced an exciting collaboration to create packaging using our *CirculenRecover* polymers for Nippon's waterproofing and interface agent painting products. The collaboration is our first step in bringing innovative solutions to China's painting sector. "We believe that this move will lead the industry trend in developing packaging with a smaller environmental footprint and will

be recognized by more and more consumers and gain industry consensus, while contributing to the country's future dual carbon development goals," said Yi Bai, President of Nippon Paint China Procurement Headquarter. "Through the innovation of packaging, our products will also be given a 'new green coat.'"



A CLEAR VISION FOR TOMORROW

Driving change toward more sustainable packaging solutions can be challenging in a highly regulated setting like the pharmaceutical sector. Our *CirculenRenew* polymers offer a solution. We worked with Röchling Medical, part of Röchling Group, to create eye drop containers using *CirculenRenew* polymers. Known for producing high-quality, secure medication packaging, Röchling was searching for the right grade for its eye drop containers that would also offer sustainability benefits. After several trials, the project team chose a low-density polyethylene with high purity necessary for pharmaceutical applications, and ideal for use in blow molding. This innovative packaging meets product performance requirements while offering a lower carbon footprint through the sourcing of alternative, renewable feedstocks.

ON THE ROAD TO A CIRCULAR FUTURE

In another example of value chain collaboration, LyondellBasell is collaborating with Audi to help close the loop on mixed automotive plastic waste. Audi is installing seatbelt buckle covers in its Q8 e-tron model line. These are made using LyondellBasell polymers that support the sourcing of feedstocks from mixed automotive plastic waste. As part of the PlasticLoop project, plastic components from customer vehicles which can no longer be repaired are dismantled, shredded and processed by advanced recycling into pyrolysis oil. The pyrolysis oil is then used as a raw material in the LyondellBasell manufacturing process for the production of new polymers, replacing fossil feedstocks. Recycled content is attributed to the Audi product via a mass balance approach and certified by ecocycle. With this process, LyondellBasell, Audi, and chemical recycler SynCycle (Next Generation Group and BDI-BioEnergy International), succeed in recycling a stream of material which today is mostly only suitable for energy recovery.



SOURCE: AUDI AG

A STEP FORWARD IN INNOVATION

LyondellBasell is delivering innovation in the outdoor sports segment. We worked with sports equipment specialist TSL to deliver a solution for an innovative snowshoe with recycled content. LyondellBasell provided *CirculenRecover* polyamide with approximately 80% recycled content for use in the snowshoe footbed, meeting TSL's needs for sustainability, extreme resistance and stylish design. Snowshoes need to be highly resistant to impact and cold temperatures and be durable over time.

After several meetings and testing prototypes in real-life, rough conditions, the teams opted for the *CirculenRecover* product with mechanically recycled

materials. As a world leader in snowshoe development and manufacturing, TSL's values are strongly connected to the respect of nature, well-being and innovation. TSL's challenge was to find recycled plastic materials that could fulfill all technical and visual requirements.

"This recent collaboration yielded an excellent compatibility for both teams," said Yoan Bibollet, head of development at TSL. "It was our first time working with LyondellBasell on the development of a new product, and we were impressed by the material and compounding experience of their teams. The plastic material which we selected for the footbed ticked all of the boxes."



ISCC PLUS CERTIFICATION

To ensure the integrity of our *Circulen* products, we offer third-party ISCC PLUS certification. This approach verifies our processes meet sustainability and traceability requirements throughout the supply chain. ISCC PLUS certification is a globally recognized system for providing traceability of recycled and renewable-based materials and verifies that mass balance accounting follows predefined and transparent rules. Customers can use these certificates to verify compliance with sustainability and traceability requirements.

Using a certified mass balance approach enables us to track how much advanced recycled and renewable-based source material goes into the production process, and then attribute this material to the final *Circulen* polymer via a Sustainability Declaration. In addition to the ISCC PLUS certification, LyondellBasell offers a Carbon-14 analysis for *Circulen*Renew products. Carbon-14 analysis is a reliable method to determine the percentage of renewable content in a physical product.

OUR ISCC PLUS CERTIFIED SITES

France

Berre
Fos-sur-Mer

Germany

Frankfurt
Münchsmünster
Kerpen
Knapsack
Wesseling (cracker)

Italy

Brindisi
Ferrara

Netherlands

Botlek
Maasvlakte
Moerdijk
Rotterdam

Spain

Tarragona

United Kingdom

Carrington

United States

Clinton, Iowa
Lake Charles, Louisiana
Channelview, Texas (cracker)
LaPorte, Texas

PRODUCT LIFE CYCLE METRICS

We are undertaking life cycle assessment (LCA) studies for our *Circulen* product portfolio, as well as products made using our proprietary technologies such as PO/TBA, which produces propylene oxide (PO) and tertiary butyl alcohol (TBA), and PO/SM, which produces PO and styrene monomer (SM). We are also assessing our *MoReTec* technology. The LCAs will be used to support customer information needs on the sustainability attributes of these products and technologies.

Additionally we are collaborating to support harmonization of product life cycle metrics and their application (e.g., ISO 14040/44, Product Environmental Footprint, GHG Protocol Product Standard) and share best practices within the chemical industry. One example is our participation in Together for Sustainability (TfS), where members are developing standards and tools for data exchange on PCF information.

Fact-based evidence is critical when claiming sustainability advantages of our products and technologies, and we are growing our internal capability to calculate life cycle metrics such as LCAs and product carbon footprints (PCFs). We use these tools to support our evaluation of new technologies, collaborate with customers on their scope 3 emission targets, and evaluate cradle-to-gate PCF in our supply chain.

We will continue to expand our capability to deliver life cycle metrics information in 2023 to support our customer information needs and sustainability ambitions, and further our portfolio of sustainable solutions.

Fact-based evidence is critical when claiming sustainability advantages of our products and technologies. We are growing our internal capability to calculate life cycle metrics such as life cycle assessments and product carbon footprints.

OUR GOAL: FOR EVERY DOLLAR WE INVEST IN VENTURE FUNDS THAT ADDRESS THE PLASTIC WASTE CHALLENGE, WE HELP CATALYZE ANOTHER FIVE DOLLARS FROM CO-INVESTORS

The magnitude of the plastic waste issue has highlighted the urgent need for support of early-stage innovations through venture funds that can provide capital, expertise and access to new markets.

LyondellBasell invested in a Circular Plastics Fund, led by Infinity Recycling, which invests in early-stage companies building demonstration and commercial advanced recycling plants. We also made a founding investment in the U.S.-based Closed Loop Partners' Circular Plastics Fund which deploys capital to improve infrastructure and technologies to increase the recovery of plastics across North America. These investment commitments, totaling more than \$10 million, align with our approach to help end plastic waste in the environment and promote a circular, low carbon economy.

LyondellBasell is also a founding member of the Alliance to End Plastic Waste (AEPW), which aims to address the plastic waste challenge by focusing on enhancing waste management capacity and capability, and improving collection, sorting, processing, and recycling systems, especially in underserved regions. Our CEO serves on the Executive Committee. With more than 35 projects in 29 countries, AEPW expected to divert 30,000 metric tons and recycle 21,000 metric tons of plastic waste through its project portfolio in 2022.

These investment commitments, totaling more than \$10 million, align with our approach to help end plastic waste in the environment and promote a circular, low carbon economy.



OUR GOAL: ZERO LOSS OF PLASTIC PELLETS TO THE ENVIRONMENT FROM OUR OPERATIONS

LyondellBasell sells polymer products in the form of pellets, flakes and powders, which are handled at multiple points from creation to customer delivery. As of December 31, 2022, we had 75 polymer manufacturing, research and technical sites that produce or handle polymers with a total production capacity of 12.3 million metric tons annually.

We are committed to zero pellet loss to the environment and being transparent about our performance. We monitor and report pellet loss in accordance with American Chemistry Council (ACC) guidance. For purposes of our reporting, loss is defined as an unplanned release of polymeric solids from a site boundary in a quantity greater than 0.5 kilograms (equivalent to 1.1 pounds) in a single incident. In 2022, approximately 11 kilograms of polymeric solids was lost offsite. We clean spills and conduct investigations to prevent similar incidents in the future.

We conduct annual assessments of our operations to evaluate and improve pellet loss efforts, including monitoring, handling, recycling, safe disposal, cleaning and containment. We also have tools to identify opportunities to prevent pellet loss and emphasize educating and empowering our employees in their continuing support of this effort.

For example, in 2022, our Wesseling plant installed a truck blow off system. By removing pellets from trucks before leaving the site, we can prevent loose pellets from being blown from the trucks onto the public roadways and ending up in drains that lead to waterways. The process starts with a sensor detecting a vehicle is approaching. Two blowers immediately start up and direct compressed air toward the top of the vehicle. The special arrangement of the nozzles propels pellets away from the vehicle into a collection area. Our Carrington site in the U.K, Tarragona site in Spain, and Berre site in France now have the same system. Although the systems are still in the testing phase, these four sites expect to make the system part of their regular operations.

Making a clean sweep

LyondellBasell is a member of Operation Clean Sweep® (OCS), the plastics industry’s global initiative to promote collaboration, training and education in controlling and reducing the loss of pellets, flakes and powders. We also committed to OCS Blue, a U.S. program that enhances the management, measurement and reporting requirements for pellet loss into the environment. To progress our commitment to zero pellet loss to the environment, 75 LyondellBasell polymer manufacturing facilities around the globe took part in OCS Week in 2022. This week-long event offered an opportunity for sites to share best practices to prevent pellet loss and included thorough site-wide ‘sweeps’ to clean up pellets.



Year	Number of polymer sites	Annual production capacity (million metric tons)	Loss (kilograms)
2020	79	12.2	12
2021	76	12.3	43
2022	75	12.3	11

CLIMATE CHANGE

TAKING CLIMATE ACTION

Addressing climate change is one of the most pressing challenges our world faces and we believe collective action and a sense of urgency are needed.

As a leader in our industry, we have an important role in driving change. We support the objectives of the Paris Agreement to limit global temperature rise to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C.

We are committed to reducing GHG emissions from our global operations and value chain, and to delivering solutions which advance our customers' climate ambitions and support society's transition to a low carbon world. We believe a commitment to net zero scope 1 and scope 2 emissions by 2050 and a credible pathway to 2030 for scopes 1, 2 and 3 are critical to the long-term success of LyondellBasell.

In December 2022, we stepped up our ambition by accelerating our interim targets for 2030 in line with the best available science. We increased our 2030 GHG emissions reduction target for scope 1 and 2 emissions to 42% and established a 2030 scope 3 emissions reduction target of 30%, relative to a 2020 baseline. We submitted a commitment letter to the Science Based Target Initiative (SBTi) for validation of our 2030 goals. The SBTi drives ambitious climate action in the private sector by enabling organizations to set science-based emissions reduction targets.



Included in our approach is a commitment to secure at least 50% of our global procured electricity from renewable sources by 2030. We will also work with our utility suppliers to lower the carbon intensity of the electricity and steam that we procure.

Importantly, as companies within our value chains increasingly set their own scope 3 goals, we believe our increased climate ambitions will be an advantage. As an early mover, we aim to deliver low carbon footprint materials that will meet increasing demand across our value chains.

OUR GOALS

- Achieve net zero GHG emissions from our global operations by 2050¹
- Reduce absolute scope 1 and 2 GHG emissions 42% by 2030²
- Reduce absolute scope 3 GHG emissions 30% by 2030³
- Procure a minimum of 50% of electricity from renewable sources by 2030⁴

OUR APPROACH

- Integrate proven solutions to improve the efficiency of our manufacturing processes and switch to less carbon intensive fuels
- Assess opportunities in electrification of our processes and in carbon capture technology
- Increase our use of renewable and low carbon energy primarily through power purchase agreements and collaboration with our utility suppliers
- Help accelerate the scale up and deployment of breakthrough technologies to reduce the carbon footprint of chemical processes to net zero by 2050 through collaboration
- Advance our use of circular and renewable-based feedstocks and engage with suppliers to support scope 3 emissions reductions
- Continue to integrate climate impacts into our business processes and strategy
- Engage with governments and industry peers to support effective policies to achieve the goals of the Paris Agreement and our global climate ambitions

¹ Our 2050 net zero GHG emissions goal includes scope 1 and 2 emissions.

² Relative to a 2020 baseline.

³ Relative to a 2020 baseline.

⁴ Based on 2020 procured levels.



The role of public policy

We believe public policy has an essential role to play in the transition to a low carbon economy. Our strategy for achieving our climate ambitions relies on several key enablers. These includes stable positions and policies independent of political cycles, and the development of necessary infrastructure and technologies to support the transition toward net zero.

We support policies that:

- Encourage the development of affordable and reliable low carbon energy needed to support industrial operations through various incentives that reward investment in carbon-reducing technologies and support the development of needed infrastructure.
- Promote advances to develop carbon capture and storage infrastructure at the scale required to enable the storage of GHG emissions, which are technically unavoidable today, or where the solution involves excessively high economic or social costs.
- Promote significant increases in renewable electricity production and grid capacity upgrades needed to support the high electricity demand tied to the electrification of processes.
- Encourage further development of affordable, reliable renewable energy and baseload generation from other non-emitting sources.

- Accelerate the development of emerging technologies that enable the reduction of emissions from carbon intensive, large scale manufacturing needs, including processes and adjacent infrastructure to enable cost effective use of CO₂ at scale for the production of higher value chemicals.

We also support a carbon pricing scheme that effectively facilitates a transition to a net zero economy. We believe a global carbon price provides the most efficient, fair and uniform way to reduce GHG emissions at scale. In the absence of a global price on carbon, in the near-term, we support regionally implemented cap-and-trade programs.

Finally, while we expect the cost of low carbon hydrogen, irrespective of its mode of production, to become increasingly competitive, we will continue to need public support for the development of hydrogen production and transport capabilities in our regions of operations.

In 2023, we will publish more details on our climate advocacy approach, including our approach to participation in trade associations.

Governance of our climate goals

Recognizing the vital importance of the issue, our climate strategy is embedded in our overall business strategy and managed at the highest levels of our company. Our Board of Directors (Board) leads our commitment to sustainability and maintains oversight of our ESG profile on topics including climate change.

At the management level, our CEO oversees the company's ESG profile through regular reporting and discussion on key topics and initiatives among members of the Executive Committee, comprised of senior executives that lead LyondellBasell's businesses and functions. ESG matters including climate change impact, and are impacted by, our operations, with each function playing a role in identifying relevant opportunities, managing associated risks, and contributing to our overall sustainability program. The Executive Committee includes, among others, our Executive Vice President, Sustainability and Corporate Affairs, with responsibility for sustainability strategy and ESG reporting. In 2022, we promoted our Director, Global Sustainability to the role of Vice President and Chief Sustainability Officer (CSO). The CSO is responsible for the management of sustainability programs, strategy, and reporting.

In 2022, we reviewed our approach to our climate strategy, and created a new organization dedicated to the execution of our strategy to reach our 2050 net zero goal and underlying interim targets for scope 1 and 2 emissions. This organization is directly embedded within our business, with a direct reporting line to business executive leadership to facilitate the integration of climate as part of our overall business strategy. In addition, with the announcement of our commitment to reduce our value chain (scope 3) emissions, we are establishing an internal network to address and reduce our scope 3 emissions, which will include representatives from several business units across the company due to the diversity of scope 3 emission sources.

OUR GOAL: ACHIEVE NET ZERO GHG EMISSIONS FROM OUR GLOBAL OPERATIONS BY 2050

Our strategy to reach net zero scope 1 and scope 2 emissions from our global operations by 2050 is focused on six levers.

Energy efficiency: Lowering the energy demand of our operations through initiatives including flare gas recovery, heat integration and process optimization.

Fuel Switching: Reducing the carbon intensity of the fuels we use on site by increasing the share of lower carbon intensive fuels in our fuel mix, and in particular hydrogen, to displace other fuels.

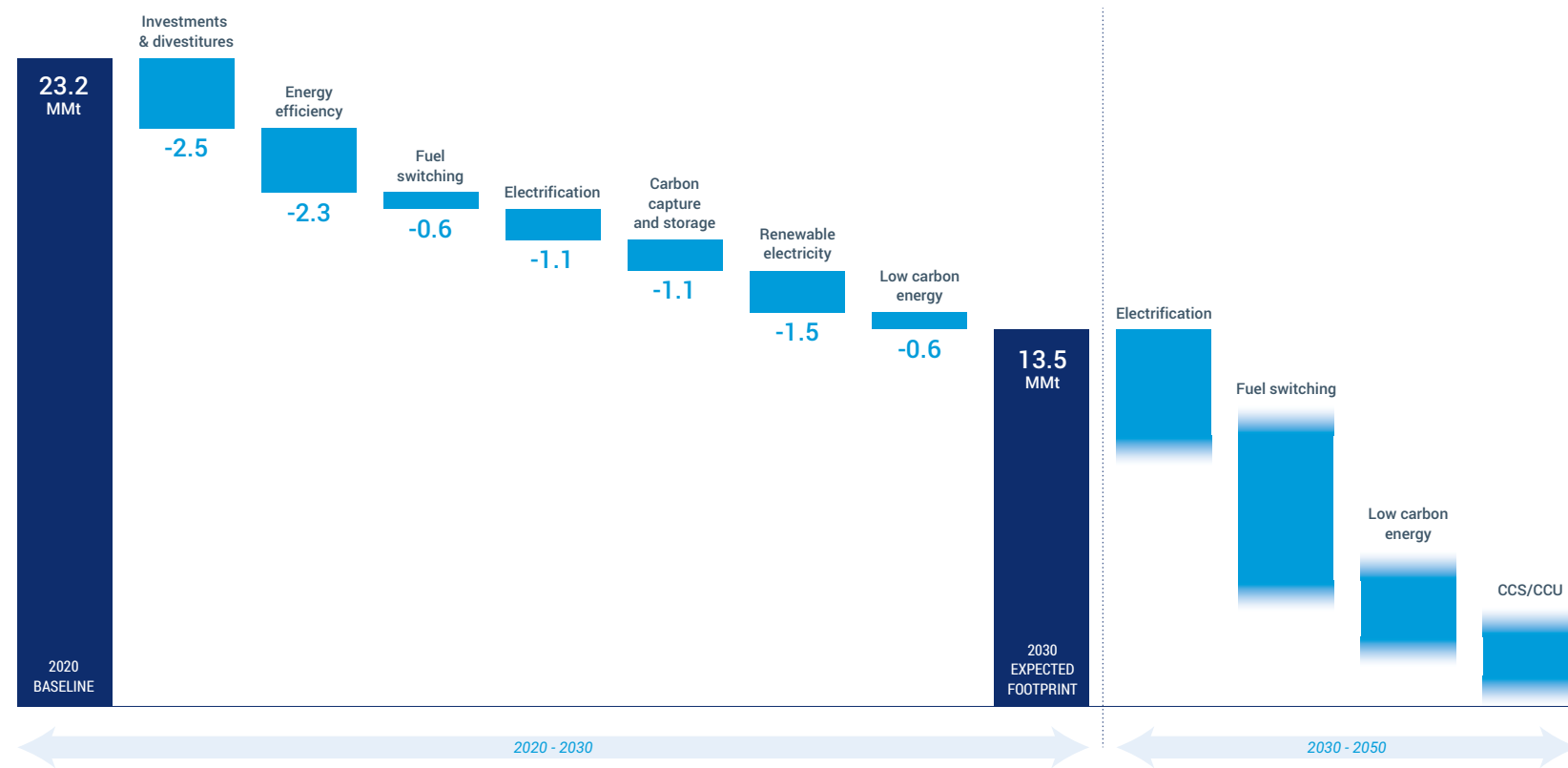
Electrification: Electrifying our processes to replace the use of fossil fuels with low carbon or renewable electricity.

Carbon Capture and Storage/Utilization (CCS/CCU): Reducing direct emissions by enabling the capture and storage or reuse of CO₂ from our operations.

Emerging technologies: Developing and utilizing new technologies for the production of olefins, chemicals and polyolefins with a lower carbon footprint compared to traditional processes. This includes technologies that enable circularity, such as our *MoReTec* advanced recycling technology.

Low Carbon Energy: Reducing emissions associated with our purchased electricity and steam needs by sourcing electricity from renewable energy projects, and collaborating with utility suppliers to lower the carbon intensity of the energy we purchase.

PATHWAY TO NET ZERO FROM GLOBAL OPERATIONS



The projected contributions of these reduction levers are illustrated in chart above. Projects categorized under these levers are in different stages of development, approval and execution in line with our overall plan and the turnaround schedules of our manufacturing sites. We regularly assess our strategy and developments to ensure we capture opportunities to optimize our approach.

OUR GOAL: REDUCE ABSOLUTE SCOPE 1 AND 2 GHG EMISSIONS 42% BY 2030⁵

Our 2030 strategy for scope 1 and 2 emissions includes a portfolio of projects categorized under the levers listed below. We take into account organic growth and divestitures and previously announced closures of assets. We have accounted for the additional emissions from our new PO/TBA plant in Channelview, Texas, commissioned in March 2023. As announced in April 2022, we plan to close the Houston refinery by the end of December 2023. This is expected to reduce scope 1 and scope 2 emissions by more than 3 million metric tons annually.

Levers for reducing scope 1 and scope 2 emissions by 2030 include:

Electrification

Electrification is part of our approach to achieving our 2030 target and our 2050 net zero goal for scope 1 and scope 2 emissions. Part of our 2030 approach will be to reduce the use of fossil fuels in our utilities, in particular through electrifying our steam production. When coupled with renewable or low carbon electricity, this approach will allow us to lower the carbon footprint of our onsite produced energy.

Longer term, we anticipate process electrification will be an integral part of our approach to achieving net zero in our operations, and notably in our olefins plants, which represent more than half of our scope 1 and 2 footprint.

Fuel switching

We refer to fuel switching as the use of hydrogen and other fuels with low carbon intensity to displace higher carbon intensive fuels and thereby reduce GHG emissions in our operations. We anticipate fuel switching will be another key element in our approach to achieving our 2030 target and 2050 net zero goal for scope 1 and 2 emissions, in particular for our olefin and other higher energy intensive process units.

We are evaluating hydrogen supplies from a variety of sources, both internal and external, in our effort to reduce GHG emissions from fuels used in our operations. Internally, we are evaluating reforming gases from our processes to produce hydrogen, and the production of on-purpose hydrogen. Externally, we support the development of a hydrogen value chain. To enable this development,

we believe supportive policies and value chain collaboration will be critical. This is why we are working with several parties, including Air Liquide, Uniper and Chevron, on a joint study to evaluate and potentially advance the development of a production facility for low carbon hydrogen and ammonia in the U.S. Gulf Coast.

We are also pursuing other opportunities to reduce the carbon intensity of the fuels we use. Our collaboration with Evonik will allow us to phase out coal from our power plant in Wesseling, Germany, by 2024, replacing it with high pressure steam produced from natural gas at Evonik's neighboring site.

Carbon capture storage and utilization

We support the development of infrastructure for the capture and storage of CO₂ to enable emission reductions from processes where no other suitable technical or economical solution exists today. In particular, carbon capture and storage (CCS) can be used in combination with hydrogen production from natural gas, to create what is known as blue hydrogen. Recognizing economically feasible CCS infrastructure as a critical lever to



⁵ Relative to a 2020 baseline.

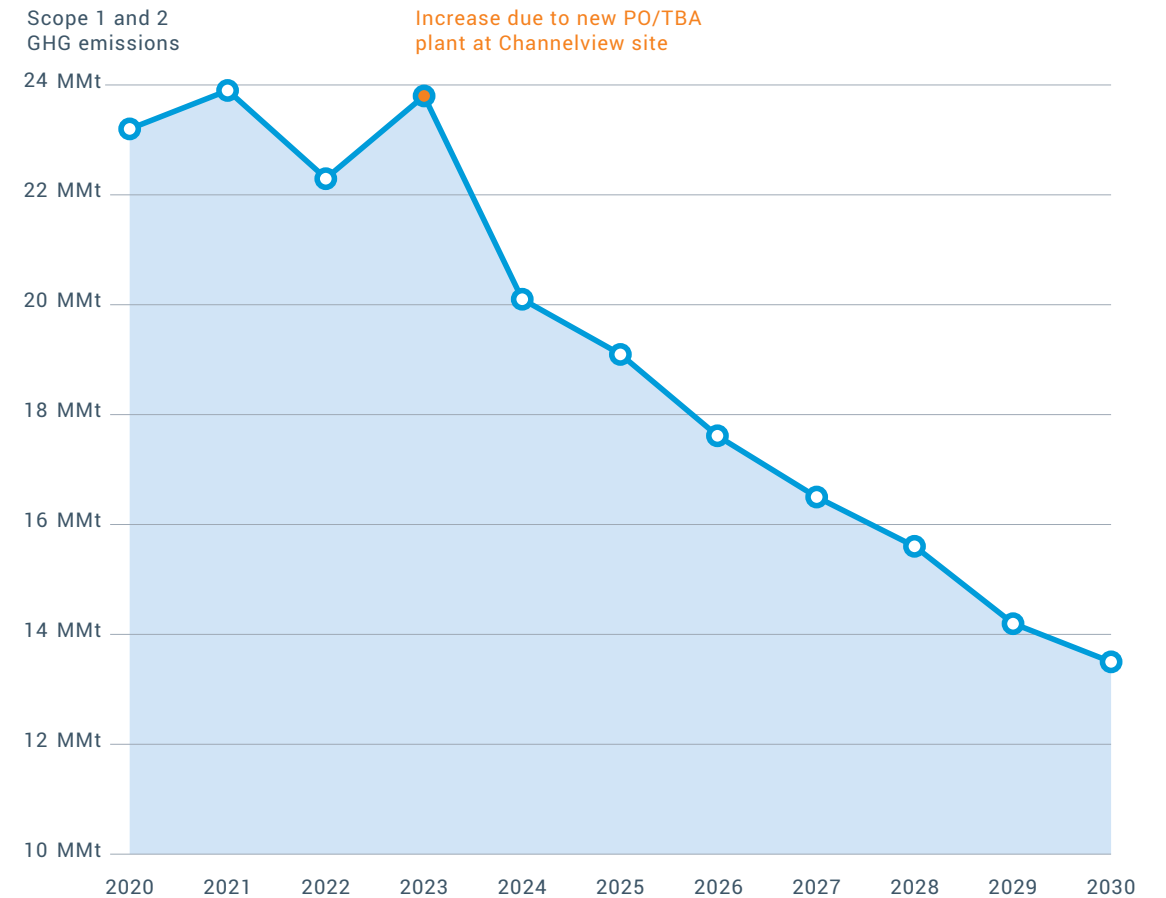
reduce emissions and enable a supply of blue hydrogen, we are conducting feasibility studies at key manufacturing sites in Europe and in the U.S. for the potential deployment of carbon capture equipment with linkages to storage infrastructure under development.

Longer term, we believe in the potential of CO₂ utilization as an alternative to permanent storage. We are exploring collaboration opportunities with different stakeholders to bring CO₂ utilization approaches to technological and commercial maturity. CO₂ utilization not only has the potential to reduce scope 1 and 2 emissions through CO₂ capture, but also to reduce scope 3 emissions by converting the captured CO₂ to higher value chemicals that could replace current fossil-based feedstocks.

The graph represents our expected progress toward our 2030 target. We expect our scope 1 and 2 emissions will increase temporarily in 2023 due to the commissioning of our PO/TBA plant. We estimate that a significant portion of our reduction efforts will take place in the latter half of the decade, as many of these projects are aligned with the turnaround schedules of our manufacturing sites. Several of our projects are also dependent on key enablers, such as the construction of infrastructure.

Estimates of the capital expenditures necessary to achieve our emissions reduction goals are built into the company's long-range plan. These investments are not expected to represent a significant portion of total capital expenditures over the next three years, nor change the capital allocation strategy. While many of the GHG emissions reduction projects are still in the early stages of development, the company will evaluate, pursue and prioritize its GHG emission reduction investments based on each project's rate of return.

EXPECTED PROGRESSION TOWARD 2030 TARGET



OUR GOAL: PROCURE A MINIMUM OF 50% OF ELECTRICITY FROM RENEWABLE SOURCES BY 2030⁶

Renewable electricity is a critical reduction lever in our journey to achieve net zero scope 1 and scope 2 emissions by 2050.

We have made significant progress toward achieving our renewable energy procurement goal. Renewable energy is an important component of our 2030 and 2050 strategy, and power purchase agreements are our preferred approach to decarbonizing our electricity supply. These strategic projects propel us forward in greenhouse gas emissions reduction, and they also provide scalability and support investment in new renewable energy capability. Power purchase agreements also are a good business decision, helping to protect businesses against a potentially volatile market.

In 2022, we signed eight renewable electricity power purchase agreements (PPAs) in the U.S. and Europe, achieving more than 50% of our 2030 target. The projects are both wind and solar, and the majority are located in Texas. The Tarragona Solar Project in Spain is the first physical PPA project located at a LyondellBasell manufacturing site. This project is expected to begin operations in the third quarter of 2023 with approximately 5 megawatts (MW) of renewable energy capacity. In total, these PPAs represent approximately 933 MW of renewable energy capacity and are estimated to generate an amount of renewable electricity equivalent to the annual electricity consumption of approximately 380,000 households.

In March 2023, LyondellBasell and Greenergy signed five long-term solar power PPAs. Under the 15-year contracts, the Spanish renewable energy producer will supply solar energy from the La Cereal solar farm project, which is expected to be operational at the end of 2025. The agreements represent approximately 141 MW of solar energy capacity, equivalent to the annual electricity consumption of approximately 90,000 European homes. With these agreements, LyondellBasell achieved 70% of our goal to procure at least half of our electricity from renewable sources by 2030. In total, these PPAs will reduce our company's scope 2 emissions by more than 1 million metric tons per year when the projects are operational.

In addition, we are working to identify and implement solutions to secure low carbon energy through various projects under evaluation to supplement our renewable electricity supply at our sites in North America and Europe. These include working with our current utility suppliers to reduce the carbon intensity of the energy we procure, and assessing the feasibility of emerging technologies to deploy at our sites.

LYONDELLBASELL POWER PURCHASE AGREEMENTS

Project name	Region	Source of renewable power	Estimated start-up	Power generation capacity
Limestone	North America	Wind	2023	100 MW
Files	North America	Solar	2023	116 MW
Crown	North America	Solar	2023	82 MW
Sol	North America	Solar	2023	82 MW
Cottonwood	North America	Solar	2023	150 MW
Monte Alto	North America	Wind	2026	168 MW
Nordics	Europe	Wind	2026	230 MW
Tarragona	Europe	Solar	2023	5 MW
La Cereal	Europe	Solar	2025	141 MW

Projects listed are as of March 2023 and represent LyondellBasell's portion of the project.

⁶Based on 2020 procured levels.

OUR GOAL: REDUCE ABSOLUTE SCOPE 3 GHG EMISSIONS 30% BY 2030⁷

Our scope 3 goal was developed following the best available science, and we are seeking SBTi validation of our goal.

Our scope 3 goal was developed following the best available science, with a coverage of two thirds of our total scope 3 emission inventory in line with the latest SBTi guidance. We are currently seeking validation of our goal with the SBTi. Several reduction levers are important for achieving scope 3 reductions:

The exit from our refining business: Our exit from the sale of refined products, including gasoline, diesel and jet fuel, and corresponding exit from procuring various raw materials including crude oil, will represent in total a reduction of approximately 40 million metric tons of scope 3 emissions annually.

Use of circular feedstocks: We are increasing our use of renewable bio-based and recycled feedstocks, in line with our commitment to produce and market at least 2 million metric tons of recycled and renewable-based polymers annually by 2030.

Engaging with suppliers: By engaging with suppliers, including those that supply our feedstocks and raw materials, we can better understand the product carbon footprint of the materials we procure from them and explore the potential for collaboration on emissions reduction opportunities. We will also utilize the product carbon footprint guidance from Together for Sustainability to enable further harmonization on scope 3 accounting approaches across the value chain.

Shifting to less carbon intensive fuels: Switching to the use of lower carbon intensive fuels in our operations may offer the potential to lower our scope 3 emissions, in addition to reducing our scope 1 and/or scope 2 emissions.

Engaging with logistics providers: We are engaging with our logistics suppliers to better understand emissions linked to the transportation of our products to our customers, and reviewing opportunities to optimize our distribution routes to reduce GHG emissions. We participated in the development of the Global Logistics Emissions Council (GLEC) guidance for the European Chemical Industry as part of the Smart Freight Centre and are working with logistics suppliers to improve the accuracy of emissions reporting to guide optimization efforts.

Estimating scope 3 emissions can be challenging as the industry's understanding of sources and appropriate emission methodologies is evolving. Additional guidance for calculating and addressing scope 3 emissions is currently underway across many industries, including the chemical sector. We are engaged in several sector initiatives to improve the consistency and accuracy of scope 3 emission estimates and reporting, including in SBTi Chemical Industry Guidance and Together for Sustainability's Product Carbon Footprints.

⁷Relative to a 2020 baseline.



CLIMATE-RELATED RISKS AND OPPORTUNITIES

LyondellBasell includes climate-related risks and opportunities in its Enterprise Risk Management (ERM) program. Additionally, we have a dedicated Climate Change Risk Management Process derived from the overall ERM program and we utilize the Task Force on Climate-Related Financial Disclosures (TCFD) framework to guide our approach. This process is used to address specific climate-related risks through a structured and formal approach. The risks are evaluated with input and alignment from the Executive Committee.

The Climate Change Risk Management Process utilizes the six-step ERM risk management process for both risks and opportunities:

- Understanding objectives
- Identification
- Assessment
- Evaluation
- Response
- Monitoring and reviewing

This is an iterative and dynamic process based on the International Standard ISO31000.

Climate-related risks and opportunities are identified at an enterprise level with the Executive Committee, at the department level and at a program/project level where appropriate. For identification of risks and opportunities with the potential for substantive financial or strategic impact, we analyze 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).

Assessing risks involves likelihood and impact ratings. The assessment of likelihood considers any previous instances of the risk occurring either internally or externally. By analyzing historic event data in conjunction with current controls and early warning indicators, an estimated likelihood can be determined. Impact is assessed using both financial criteria and non-financial criteria such as regulatory, safety, reputational and people impacts.

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 utilizing 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.

The table summarizes our assessment of the different physical and transitional climate risks we have identified as potentially having a substantive impact on our business strategy.

Our TCFD index can be found on our website at www.lyondellbasell.com under Sustainability Reporting.

RISK TYPE	NATURE OF RISK
Regulatory	As an energy intensive business, LyondellBasell is impacted by existing and emerging energy and climate legislation. For example, the European Union Emissions Trading System has a direct impact on our operational costs. We expect our 1.5°C aligned scope 1 and 2 emissions reduction targets to partially mitigate the risk associated with new or modified climate regulation.
Technology	Risks related to developments in GHG emission reduction 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. We strongly believe in the role emerging technologies will have to play to reduce GHG emissions in the chemical sector, and we are pursuing multiple opportunities highlighted in this section as part of our net zero in scope 1 and scope 2 emissions strategy.
Legal	LyondellBasell considers the potential for litigation and other legal risks in its climate-related risk assessments. For example, a court ruling could impose requirements increasing the cost of meeting our climate goals due to an accelerated pace, or may lead to reputational risk or loss of stakeholder confidence.
Market	There is an increasing awareness in downstream markets of the overall CO ₂ footprint of products. Changing market demand related to climate change, for example, for low carbon products, may create risks or opportunities based on our speed and ability to respond.
Reputation	There is a risk our response to climate change could impact our reputation with stakeholders including our communities, customers and shareholders. For example, if our response is viewed as insufficient, this could result in loss of market share from customer deselection, departure of employees, or loss of shareholder support.
Acute physical	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 U.S. Gulf Coast. Potential acute physical impacts of climate change include 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.
Chronic physical	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.

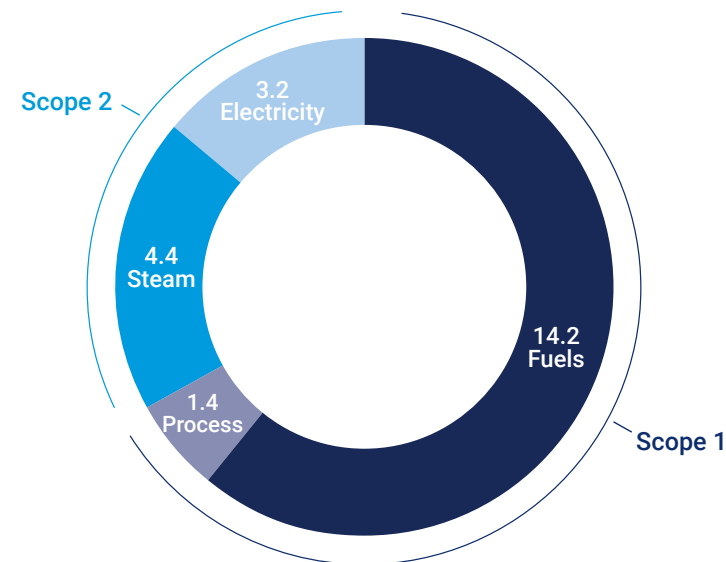
GHG EMISSIONS AND ENERGY

Our 2020 baseline emissions

Our 2020 baseline scope 1, 2 and 3 emissions are estimated to be 120 million metric tons, with approximately 80% falling under scope 3. Our scope 1 and scope 2 emissions are driven by the significant energy and heat requirements in our manufacturing processes. The chart below illustrates the breakdown of our baseline emissions across scope 1 and 2.

The emissions associated with the production of raw materials we use, and the use and end of life of products we sell represent a significant proportion of our scope 3 emissions. For more information on our scope 3 categories and our methodology, see GRI 305 Emissions 2016 on [pages 80-82](#) of this report.

2020 SCOPE 1 AND SCOPE 2 GHG EMISSIONS BASELINE



GHG EMISSIONS (MILLION METRIC TONS)

	2020	2021	2022
Scope 1 emissions	15.6	16.3	14.7
Scope 2 emissions (market-based)	7.6	7.6	7.4
Scope 2 emissions (location-based)	7.1	7.1	7.0
GHG intensity (metric tons of CO ₂ e per metric ton of product)	0.60	0.57	0.55
Scope 3 emissions	98.4	104.8	101.1

Scope 1: Direct emissions from sites operated by LyondellBasell
 Scope 2: Indirect emissions from external electricity and steam suppliers
 Scope 3: Other indirect emissions that occur in the value chain

For details about our GHG emissions accounting and methodology, see GRI 305 Emissions 2016 on [page 80](#) of this report.

Our 2021 scope 1 and 2 data was adjusted following minor updates to emission factors primarily received from our utility suppliers. GHG intensity for 2020 and 2021 was adjusted due to updated information from our suppliers. Our 2021 scope 3 data, published previously in our CDP Climate Change reports, was corrected due to double counting of some feedstock volumes in our category 1 data, and to capture product volumes which had been excluded in categories 11 and 12.

The company is committed to continuous improvement in reporting and strives to utilize applicable calculation methodologies and emissions factors that represent evolving expert analysis, information and assessment.

ENERGY CONSUMPTION (MILLION GIGAJOULES)

	2020	2021	2022
Total energy consumption	383	415	382
Energy intensity	9.88	9.96	9.51

Our energy data encompasses manufacturing sites, pipelines and large regional offices. Energy intensity for 2020 and 2021 was adjusted due to updated information from our suppliers.

LIMITED ASSURANCE

PwC performed a limited assurance engagement over our 2022 total energy consumption and scope 1 and scope 2 emissions.

The Report of Independent Accountants is on [page 95](#) of this report.



ENVIRONMENTAL PERFORMANCE

AIR EMISSIONS

NOx, SOx and other emissions

We are committed to reducing emissions, promoting pollution prevention and complying with all laws and the terms of our permits. We evaluate and adopt appropriate pollution controls, and closely monitor and control our emissions.

Variances in the emissions reported for 2022 are largely a result of the permanent shutdown of our Tuscola, Illinois, site, as well as several site maintenance activities and the temporary shuttering of the Maasvlakte site near Rotterdam at the end of the year.

Nitrogen oxides (NOx)

NOx are by-products of combustion generated while burning fuels to produce heat, steam or electricity. Boilers and furnaces in our chemical and refining operations are the source of most of our NOx emissions.

Sulfur oxides (SOx)

In our operations, SOx emissions come from burning fuel containing small amounts of sulfur, and from the process of removing sulfur from fuel products at our Houston, Texas, refinery.

Volatile organic compounds (VOCs)

VOCs are associated with the chemicals and fuels we handle and produce and are released into the atmosphere during chemical and fuel production. VOCs can be released from point sources or through fugitive emissions from pump seals, valves and other equipment. We have extensive programs in place to identify and repair leaks, including using infrared camera technology.

Carbon monoxide (CO)

CO is produced when fuels are burned to produce heat, steam or electricity. The majority of our CO emissions come from burning natural gas at our chemical and refining operations.

Particulate matter (PM)

PM refers to small airborne particulates emitted during production, primarily from cooling towers and burning fuel.

Ozone-depleting substances (ODS)

We measure and report ODS as kg of CFC-11 equivalent and use emission factors as stipulated in the Montreal Protocol.

AIR EMISSIONS (METRIC TONS)

	2018	2019	2020	2021	2022
NOx	7,766	7,475	7,376	7,481	6,799
SOx	1,348	1,338	1,020	1,042	1,020
VOCs	7,453	7,189	7,074	7,927	7,417
CO	5,231	5,563	5,468	6,643	6,889
PM	1,197	1,173	988	1,204	1,142
ODS (kilograms of CFC-11 Equivalent)	74	160	160	230	181

We report emissions of ODS; we are not a manufacturer of ODS.

AIR EMISSIONS INTENSITY (METRIC TONS PER MILLION METRIC TONS OF PRODUCT)

	2018	2019	2020	2021	2022
NOx intensity	188	179	190	180	169
SOx intensity	33	32	26	25	25
VOC intensity	180	172	182	191	185
CO intensity	127	133	141	160	172
PM intensity	29	28	25	29	28

Air emissions intensity for 2020 and 2021 was adjusted due to updated information from our suppliers.

WATER

Water is an essential resource for our operations. We use water both in operations (primarily cooling towers and steam production) and as potable water for drinking and sanitary use at our sites and offices.

We collect data and track trends for water withdrawal, water discharge by destination and primary water uses. We also collect and track recycled/reused water. We reuse water at the majority of our manufacturing sites.

We manage water in accordance with permitted limits for discharge destination water quality, and our Operational Excellence system supports ongoing compliance.¹ Potential wastewater pollutants are identified and evaluated at the site-level, and we maintain appropriate treatment and monitoring. We also maintain and comply with permits issued by local authorities and third party treatment entities.

Where applicable, our sites monitor effluent conditions, operate, maintain and monitor pollution prevention measures, investigate and take corrective actions for any excursions and report on water treatment, monitoring, and pollution prevention, at a frequency required by the jurisdiction, but no less frequently than annually.

¹ Information about Operational Excellence is on page 46 of this report.

Our manufacturing sites are also required to:

- Report incidents of water pollution, including any time when discharge limits have been exceeded, or requirements of permits or regulatory obligations have not been met.
- Establish, document, communicate and monitor pollution prevention and resource optimization objectives, and assess and manage the risk of onsite and offsite releases to water.
- Perform periodic audits to verify Operational Excellence processes are in place and fully implemented.

Water as a shared resource

About half of the water we use comes from surface water and the remainder is split between groundwater and potable water. Some of our sites use sea water for cooling, while others draw water from freshwater sources, such as rivers, aquifers or local water supplies. We recycle our supply of water, when possible, to limit the amount we draw from regional supplies. We use a small amount of potable water and source a small amount of recycled water from some industrial providers located close to our manufacturing sites.

WATER WITHDRAWALS (MILLION M³)

	2018	2019	2020	2021	2022
Total	243.8	253.4	282.1	297.9	297.8
Fresh surface water	107.7	104.6	129.3	144.9	141.6
Groundwater	26.4	26.9	23.3	24.3	23.2
Third-party water	9.7	23.6	29.5	58.8	61.1
Seawater/brackish water	73.3	73.2	73.0	68.7	70.8
Other water	26.7	25.1	27.0	1.2	1.1

In 2021, adjustments to reportable water withdrawal quantities were made to align with GRI 303 Water and Effluents 2018.

WATER DISCHARGE (MILLION M³)

	2018	2019	2020	2021	2022
Total	150.3	155.8	186.9	192	187.4
Fresh surface water	53.5	52.2	40	45.4	38
Groundwater	0	0.2	0.2	0.1	0.1
Third-party water	6.3	10.6	18.7	19.3	19.8
Seawater/brackish water	73.8	77.5	77	73	80.6
Other water	16.7	15.3	51	54.2	48.9

In 2021, adjustments to reportable water discharge quantities were made to align with GRI 303 Water and Effluents 2018.

WATER CONSUMPTION (MILLION M³)

	2018	2019	2020	2021	2022
Total	93.5	97.6	95.2	105.8	110.4
of which are Evaporative Losses		72.8	75.1	80.5	86.1

In 2021, adjustments to reportable water consumption quantities were made to align with GRI 303 Water and Effluents 2018.

EXTREMELY HIGH OVERALL WATER RISK SITES

Site	Country
Chennai	India
Sinnar	India
Vadodara	India
Gempol	Indonesia

HIGH OVERALL WATER RISK SITES

Site	Country
Guangzhou	China
Suzhou	China
Changshu	China
Dalian	China

As defined by the Aqueduct Water Risk Atlas tool.

Assessing our water impacts

In 2020, we conducted a baseline water risk assessment of our manufacturing sites using the World Resources Institute (WRI) Aqueduct Water Risk Atlas tool (Aqueduct™). Aqueduct rates geographic locations worldwide on a scale from low to extremely high overall water risk based on watershed data related to water quantity, quality and regional factors. In 2022, we applied the 3.0 version of the tool, which included updated data and hydrological modeling.

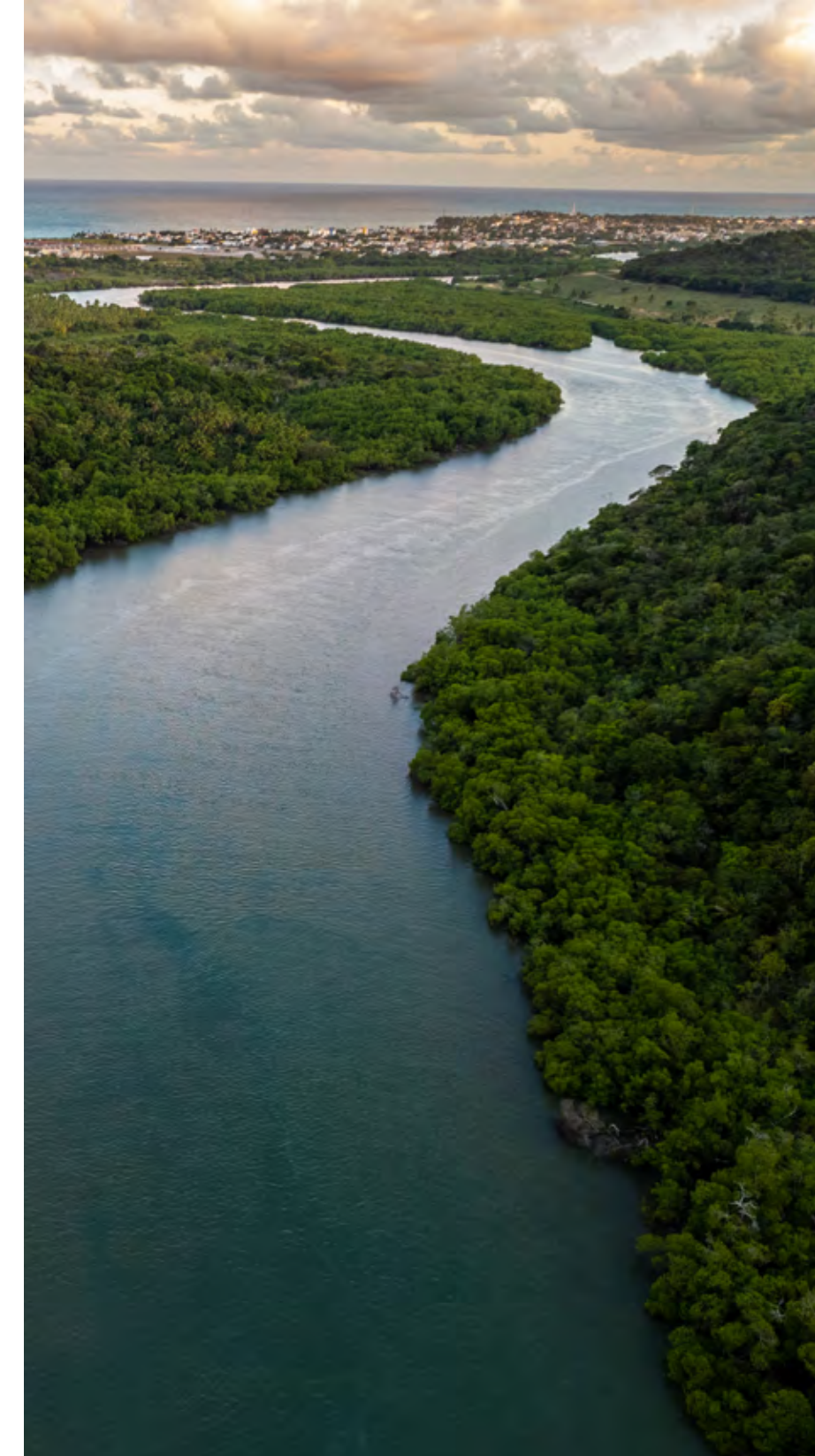
According to Aqueduct, the majority of our sites are classified as low overall water risk, aggregated and weighted in accordance with the tool's chemicals sector category. Our sites located in extremely high or high overall water risk areas of the world comprised less than 0.06% of our estimated total water consumption in 2022.

Also in 2022, we engaged a third party expert to complete a water use and risk assessment as a supplement to the Aqueduct assessment. The assessment focused on our large manufacturing facilities

encompassing over 98% of our global water consumption, based on 2022 estimates. None of these sites were identified as high or extremely high overall risk in the Aqueduct assessment. Results of the assessment will be used to help guide possible watershed-specific targets, approaches and improvements. We set specific water quality targets for cooling water and steam generation, and track and report on these parameters using our Global Water Quality Dashboard (GWQD). While this tool was developed for reliability and cost efficiency purposes, it also enables us to drive water use efficiency.

We also set sanitation-based water quality standards for our potable water systems and open evaporative cooling towers, and track exceptions in our safety reporting framework.

We participated in the CDP Water Security questionnaire for the first time in 2022 and received a score of B-. The full report can be found on our website at www.lyondellbasell.com under Sustainability Reporting.



WASTE GENERATED

(THOUSAND METRIC TONS)	2018	2019	2020	2021	2022
Total	1,998.4	1,881.4	1,962.1	1,883.4	1,343.4
Hazardous waste	1,311.7	1,209.3	1,223.9	1,273.9	1,086.6
Non-hazardous waste	686.7	672.1	738.2	609.5	256.8

WASTE DIRECTED TO DISPOSAL

(THOUSAND METRIC TONS)	2018	2019	2020	2021	2022
Total	1,926.7	1,779.7	1,896.2	1,820.8	1,288.8
Incineration (with energy recovery)	239.7	191.3	213.1	212.3	157.2
Incineration (without energy recovery)	2.7	3.6	4.0	3.3	7.3
Landfilling	116.9	93.2	90.3	92.6	91.0
Other	1,567.4	1,491.6	1,588.8	1,512.6	1,033.3

In order to align with GRI 306 Waste 2000, certain waste streams originally reported as "land disposal" are now reported in the "other" category and have been restated for prior years.

WASTE DIVERTED FROM DISPOSAL

(THOUSAND METRIC TONS)	2022
Total	54.6
Preparation for reuse	0.2
Recycling	53.7
Other recovery operations	0.7

In 2022, adjustments to waste categories were made to align with GRI 306 Waste 2000.

WASTE

We take every opportunity to avoid generating waste, reusing material in our operations wherever possible. Most of the waste we produce is dilute hazardous liquid aqueous waste from chemical plant operations. Our operations also produce non-hazardous solid waste including general plant trash and construction and demolition debris. All waste disposal is managed in accordance with applicable regulations.

In 2022, waste generation was reduced by 29% compared with 2021. This reduction was primarily due to a decrease in non-hazardous waste as a result of the permanent shutdown of the ethanol unit at our Tuscola, Illinois, site and reduced waste generation due to a turnaround at our site in Channelview, Texas. Additionally, the start-up of a major waste reduction project in Maasvlakte resulted in a significantly reduced amount of caustic waste water sent offsite for disposal.

Additional waste details can be found in GRI 306 Waste 2000, [pages 83-84](#) in this report.

BIODIVERSITY

In 2022, we took an important step forward in the development of our biodiversity ambition, commitments, targets and strategy. We completed an assessment of our major manufacturing operations, large offices and significant activities upstream and downstream of our direct operations from a biodiversity perspective.

Nine global datasets were used to assess our locations, including Species Threat Abatement and Restoration (STAR) maps, the World Database on Protected Areas (WDPA) World Heritage Sites (WHS), Key Biodiversity Areas (KBAs) from WDPA, and the Alliance for Zero Extinction (AZE). Additionally, major upstream and downstream activities were grouped and reviewed based on materiality within the company. A first screening approach for upstream and downstream activity considered relative importance across multiple biodiversity stressors defined by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).

As a result of this assessment, we identified areas where further work is needed. This includes approximately 10% of our direct operations sites, our fossil-fuel based feedstocks, and our polypropylene and high-density polypropylene products.



THRIVING SOCIETY

SUPPORTING A THRIVING SOCIETY

We make an impact far beyond our company when we improve society and create long-term value for our stakeholders.

Businesses can play an important role in positively impacting communities inside and outside their own fencelines. Stakeholders like consumers, investors and employees increasingly expect companies to have a defined purpose.

Purpose-driven businesses can derive many benefits from having a clearly articulated vision, from tapping new income streams, to enhancing operational efficiency and attracting and retaining outstanding talent. According to a recent study, purpose-driven companies also achieve higher gains in market share and grow three times faster than their competitors on average.¹ A recent World Economic Forum report also found that businesses with a clear purpose did better at protecting people and the planet and were more likely to inspire trust.²

¹ <https://www2.deloitte.com/us/en/insights/topics/marketing-and-sales-operations/global-marketing-trends/2020/purpose-driven-companies.html/#endnote-3>

² <https://www.weforum.org/agenda/2022/11/4-ways-purpose-in-to-profitability/>



At LyondellBasell, we are creating solutions for everyday sustainable living, working to ensure the safety and well-being of our colleagues by holding ourselves to the highest standards, embracing different backgrounds and perspectives,

promoting equity and respect among our global colleagues and in our communities and aligning our suppliers' values with our own.

OUR GOALS

- Operate safely every day and with zero incidents, zero injuries and zero accidents
- Achieve gender parity in senior leadership globally by 2032
- Achieve general population ratio of people from underrepresented groups in U.S. senior leadership by 2032
- Assess a minimum of 70% of our key suppliers globally using sustainability criteria by 2025

OUR APPROACH

- Keep our employees, contractors, customers and neighbors safe
- Advance our diversity, equity and inclusion strategy that holds leaders accountable, drives change and delivers meaningful results
- Invest in programs and support policies that strengthen our communities, our planet and tomorrow's workforce
- Collaborate for meaningful impact and accelerate our progress and learning from others

OUR GOAL: OPERATE SAFELY EVERY DAY AND WITH ZERO INCIDENTS, ZERO INJURIES AND ZERO ACCIDENTS

The health and safety of our people and the communities where we operate are our top priorities. Our safety standards apply to everyone involved in our business, including employees, contractors and suppliers performing work at our sites. LyondellBasell facilities are among the safest in our industry, with consistent top decile safety performance compared with other large and medium-sized companies belonging to the American Chemistry Council.

We closely monitor safety risks, thoroughly investigate incidents and near misses and take corrective action to prevent reoccurrence. We prioritize recognizing and mitigating potential hazards in the workplace to stop incidents and injuries before they happen. We conduct risk assessments for potentially hazardous work. These assessments range from safety checklists to formal job hazard analyses, as appropriate.

GoalZERO

A key tenant of our culture is what we call GoalZERO. GoalZERO is our commitment to operating safely with zero injuries and zero process safety, product safety and environmental incidents. We cultivate a GoalZERO mindset with clear standards, regular communication, training, targeted campaigns and events, including our annual Global Safety Day where all employees devote one day to enhance their learning about safety at work and at home.

Health, Safety and Environmental (HSE) indicators are monitored continuously using a performance dashboard. Every manufacturing site sets goals to improve process safety and occupational safety and reduce environmental incidents.

Our commitment to GoalZERO is championed at every level of the company and is overseen by the Health, Safety, Environmental and Sustainability Committee of our Board. Excellent safety culture starts at the top with senior leaders, including the CEO. Managers at each manufacturing site meet regularly to review safety performance and discuss issues relevant to their plant. HSE awareness teams evaluate incidents and find ways to prevent them in the future. Group meetings at offices and sites typically start with a safety message.

We are extremely proud of our safety performance in 2022. Our Total Recordable Injury Rate (TRIR) was 0.12, a record low performance and top decile for our industry. A total of 21 manufacturing sites achieved more than 1 million safe work hours. A total of 97 locations reached at least one year without a recordable injury. Noteworthy examples in the U.S. include our Texas sites in Bayport (6 million hours) and La Porte (5 million hours), along with our Houston Refinery (4 million hours). In the Netherlands, the Botlek and Maasvlakte site reached 4 million hours without an incident. Our Lake Charles, Louisiana Integrated PolyEthylene Joint Venture has gone 5 million hours without a recordable injury, and our Global Projects team which develops and executes major capital projects at our manufacturing sites achieved 6 million safe work hours.



FOUNDATION OF GOALZERO

EXCELLENCE

- GoalZERO success requires commitment and engagement from each of us
- We work safely and do our best because it is the right thing to do

OWNERSHIP

- Each of us has a responsibility to ourselves, to each other and our families in GoalZERO
- I must control what I can control and do what I can do to build GoalZERO

TEAMWORK

- Everyone is valued not only for what we do, but for who we are
- We are one team engaged in GoalZERO because we care about each other



Worker safety

	2018	2019	2020	2021	2022
Employees					
Fatalities as a result of work-related injuries (number and rate)	0 0	1 0.005	0 0	0 0	0 0
High-consequence work-related injuries (number and rate)	3 0.019	3 0.016	0 0	2 0.01	1 0.005
Recordable work-related injuries (number and rate)	36 0.22	39 0.20	33 0.18	34 0.17	32 0.16
Number of hours worked	32,300,000	38,100,000	36,920,000	39,276,500	39,128,500
Contractors					
Fatalities as a result of work-related injuries (number and rate)	0 0	1 0.006	0 0	2 0.01	0 0
High-consequence work-related injuries (number and rate)	1 0.006	0 0	0 0	3 0.016	2 0.011
Recordable work-related injuries (number and rate)	23 0.14	38 0.22	31 0.22	46 0.25	14 0.08
Number of hours worked	33,100,000	34,050,000	28,710,000	36,601,000	36,362,000
Combined workforce					
Total recordable injury rate	0.18	0.21	0.20	0.21	0.12
American Chemistry Council industry average	0.65	0.62	0.65	0.69	Data not available as of publication of this report

Rates are calculated on the basis of 200,000 hours worked. High consequence injuries are LyondellBasell's Level 3 injuries (hospitalization required) and do not include fatalities. Recordable Injury counts and Recordable Injury rate include all injuries and fatalities. American Chemistry Council data can be found at www.americanchemistry.com.

PROCESS SAFETY

Our process safety program establishes how we design, operate and maintain our manufacturing processes to prevent or mitigate the unplanned or uncontrolled release of process material.

This program aims to prevent serious incidents and protect our workforce and local communities and the environment. We have clear standards for identifying and managing process safety risks within our Operational Excellence system. Regular turnarounds – during which we shut down plants and carry out essential maintenance, upgrades and safety checks – are a key part of our safety program.

In 2022, we enhanced our incident investigation processes to better identify and correct systemic drivers for incidents where human error was involved. We also continued to train our operations and maintenance employees on fundamental process safety principles. The training reinforced expectations for frequent tasks such as returning equipment to service, opening process equipment, energy isolation and loading and unloading materials from containers. We completed Human Reliability Task Analyses on certain tasks where human error could result in significant consequences. The analyses identified steps where employee error mitigation techniques could be used to minimize the potential for human error.



Process safety	2018	2019	2020	2021	2022
Process safety incidents count (PSIC)	6	7	10	10	10
Process safety total incident rate (PSTIR)	0.018	0.019	0.030	0.026	0.026
Process safety incident severity rate (PSISR)	0.018	0.017	0.082	0.211	0.055

Represents number of Level 3 and above process safety incidents per 200,000 hours worked. We classify process safety incidents on scale of 0 to 5, with Level 5 having the highest impact. We define a process safety Level 3 event as Loss of Primary Containment (LOPC) resulting in either (1) Fire or explosion damage with a direct cost greater than or equal to \$100,000, (2) "Days away from work" injury, employee or contractor, (3) An officially declared community evacuation or community shelter-in-place including precautionary community evacuation or community shelter-in-place or (4) Release, within any 60 minute time period, greater than or equal to certain threshold quantities. Definition and weighting of Tier 1 PSI per ANSI/API RP 754 3rd Edition is applied for 2021. The 3rd edition update includes the reclassification of materials, clarification of definitions, expansion of data collection capabilities and other key changes. Rates for calendar years 2017-2020 were calculated using the 2nd edition of ANSI/API RP 754.

OPERATIONAL EXCELLENCE

Operational Excellence is the management system we use to deliver safety, environmental responsibility and reliability in everything we do. It sets out clear requirements for how we work, includes explicit requirements for people, process and product safety, and applies to our employees and contractors. The Operational Excellence system contains nine key elements to help identify and manage risks and ensure our employees and contractors understand their roles and responsibilities.

We undertake internal audits to verify that sites comply with Operational Excellence systems and procedures. Additionally, we share lessons learned and best practices across the business. Onsite contractors, including logistics companies that handle and transport our products, are expected to comply with our [Health, Safety, Environmental and Security \(HSE&S\) Policy](#) and support GoalZERO. In 2022, we completed 22 audits in nine countries.

LyondellBasell is committed to Responsible Care®, the global chemical industry’s voluntary initiative to drive continuous improvement in safe chemicals management and achieve excellence in environmental, health, safety and security performance. As a signatory to the Responsible Care Global Charter, we are committed to creating a corporate leadership culture that proactively supports safe chemicals management;



FIVE SITES WIN ANNUAL SAFETY AWARD

The American Fuel & Petrochemical Manufacturers (AFPM) recognized five LyondellBasell locations with its prestigious Annual Safety Awards. The Morris, Illinois, site was awarded the highest honor, the Distinguished Safety Award, which is given to the top sites with outstanding safety performance, program innovation and safety leadership. The Bayport Complex in Texas, and the Clinton, Iowa, and Tuscola, Illinois, sites were honored with the Elite Gold Award, which recognizes facilities with safety performance in the top five percentile and have demonstrated superior and consistent safety performance, program innovation and leadership. Our Louisiana Integrated PolyEthylene JV won the Elite Silver Award, which recognizes those sites that have attained top industry safety performance for the application year and demonstrated excellent program innovation and leadership over time. In further recognition of our efforts to drive change in the industry, the Morris site received the AFPM Innovation Award, which recognizes sites and their contractors with unique and innovative programs or practices that effectively improve the site’s safety performance for occupational or process safety.

LYONDELLBASELL OPERATIONAL EXCELLENCE SYSTEM FRAMEWORK

Leadership and personal accountability	We are committed to achieving excellence in every aspect of our performance. We set high expectations and hold each other accountable. We operate our business with the highest principles of integrity, ethics, and corporate responsibility.
Organizational competency	We acquire and maintain the highest possible levels of competency. We empower people to deliver superior performance. We create a culture where employees have the freedom to act with agility and urgency while balancing the need for appropriate process and governance. We embrace diversity and inclusion, and promote learning and development.
Compliance	We manage our businesses with the highest standard of corporate ethics and with strict corporate governance systems that support compliance with all laws, regulations and internal requirements.
Technology and knowledge management	We document our operating practices and continually keep them updated. Knowledge management allows for safe, reliable operations through the sharing of combined efforts of people, process and technology.
Risk management	We identify, prioritize, mitigate and manage risks to provide for the safety and health of employees, contractors, customers, and the public for the protection from the environment.
Operations	We strive for flawless execution in our operations center.
Product stewardship	We operate a worldwide product stewardship program to make health, safety and environmental protection an integral part of the development, manufacture, distribution, use, recycle and disposal of our products.
Community and stakeholder relations	We maintain strong relationships with our communities, employees, customers, suppliers, shareholders and other key stakeholders.
Assessment and improvement	We regularly review and take action regarding our systems, processes, metrics and stakeholder feedback to assure continuous improvement in our performance.

safeguarding people and the environment; strengthening our chemical management systems and influencing business partners to do the same in their own operations; engaging stakeholders to understand and respond to their concerns; and contributing to sustainability through improved performance, expanded economic opportunities and the development of innovative technologies and other solutions to societal challenges.

Emergency preparation and response

We prepare and drill routinely to be ready to take immediate action in the unfortunate event of an incident, continuously evaluating risks and maintaining detailed emergency response plans. LyondellBasell manufacturing sites maintain their own emergency response teams, including groups trained to respond swiftly to medical incidents, fires, or releases of hazardous materials. Team members are

trained on the proper procedures to follow in the event of an emergency. These procedures are tested at regular drills. We also coordinate preparation and planning with local government agencies and emergency responders. Our emergency response teams not only keep our own people and facilities safe; they also support local fire departments.

LyondellBasell maintains severe weather preparedness and response plans for all of our locations. For example, our teams at manufacturing sites located in the U.S. Gulf Coast are well-trained for hurricane season and routinely drill for what to expect and how to prepare. Our detailed storm preparedness procedures include:

- Testing power generators, communication systems and other equipment which would be used during the storm.

- Moving and/or anchoring potential projectile objects.
- Placing sandbags to help protect low-lying and critical areas, such as control rooms and substations.
- Removing debris from ditches and tank berms.
- Maintaining contact with local emergency response and mutual aid agencies.

In the event a facility shutdown is required, we conduct a thorough assessment and inspection, including a systematic review of all structures, equipment and operating systems. We also communicate this information to our local officials and community neighbors.



KEEPING PEOPLE SAFE: ON AND OFF THE CLOCK

The CEO Lifesaver Award is a top company honor given to employees and contractors who take heroic measures to save another person's life. In 2022, we recognized a group of LyondellBasell employees for their bravery. Seven employees at our Channelview Complex helped save the life of a colleague. Carlos Gutierrez had noticed his colleague was missing and went to investigate. Gutierrez eventually found his colleague unresponsive in a vehicle and quickly began CPR while six other EMT-trained co-workers, David Cruz, James Hendricks, Manual Reyes, Stephen Ayers, Matt Svoboda and Marcus Seurattan, mobilized from across the site to help render aid. The seven of them took turns performing CPR until Life Flight arrived and safely transported their co-worker to receive further care at a local hospital.

LyondellBasell employees are making a life-saving difference away from company premises, too. Luke Halterman, a Health and Safety specialist at the LyondellBasell Morris, Illinois plant, jumped in and performed CPR to save a stranger's life. Halterman was on his honeymoon in St. Lucia when he leapt into action after a man went into cardiac arrest and nearly drowned. He used his EMT training to perform chest compressions. Halterman credits EMT courses and on-the-job opportunities at LyondellBasell with providing him the skills needed to save the man's life.



DRIVE IT HOME: SHINING A SPOTLIGHT ON CONTRACTOR SAFETY

LyondellBasell wants everyone working on our behalf to go home safely every day. That is why we collaborate with our contractors at events like the 2022 Contractor CEO Safety Conference in Houston, Texas. In keeping with our 2022 Global Safety Day motto, 'Drive It Home' was the theme of this year's conference. The event shared best practices, delved into applications of human and organizational performance and looked at how leaders' knowledge, language and behaviors drive improvements. One key moment at the event was the Bright Star awards presentation, where contractor companies with zero recordable injuries in 2021 were recognized and celebrated.

PRODUCT SAFETY AND STEWARDSHIP

Our [HSE&S Policy](#) states our commitment to promoting a comprehensive approach to chemical management and sustainability in all aspects of our products' life cycles, including design, manufacturing, distribution, use, recycling and disposal activities. To realize this commitment, we apply our risk-based Product Stewardship Management System, including the systematic assessment of safer alternatives for hazardous substances of concern and promotion of their substitution when possible. Our commitment to the transition to animal-free chemical safety assessments is outlined in our [Animal Use and Welfare Policy](#).

We have chemical control procedures in place to comply with applicable regulations and we regularly monitor these requirements for changes. Relevant regulations include the Toxic Substances Control Act in the U.S. (TSCA), the European Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), the Globally Harmonized System (GHS) of Classification and Labeling Chemicals, and many more. We monitor the movement of materials, and we prevent transactions for materials, uses or customers that do not meet our safety requirements.

We also participate in the worldwide Global Product Strategy program, a voluntary initiative championed by the International Council of Chemical Associations (ICCA) which aims to improve the safety of chemical products during their use and handling. As part of our commitment to the Responsible Care® program, we worked closely with other American Chemistry Council members to develop a new Responsible Care Product Safety Code. This new code is incorporated into our Operational Excellence Product Stewardship Standard.

To help our suppliers, carriers, distributors and customers maintain high safety and environmental standards, we provide technical assistance, training and logistics support as well as support related to health, safety and environmental issues. In 2022, we conducted 63 customer site visits.

Finding safer alternatives and reducing risk

The product stewardship process begins with a cross-functional team evaluating and classifying each product or product group according to the level of risk. For each risk category, specific risk management practices and requirements are identified and reviewed on a regular basis.





Our research and development process for new products includes finding safer alternatives and reducing risk beyond regulatory requirements. In 2022, we implemented a set of sustainability and safety criteria as part of our decision-making process. These criteria aim to bring chemicals, materials, products and technologies to the market that are safer, are accelerating the transition to a circular and low carbon economy and prevent harm to human health and the environment. Additionally in 2022, we established a set of non-animal tests for toxicity screening to be performed at the early stage of new substance development. As a result of these procedures, LyondellBasell made the decision to stop development of a new project in the very first phase of analysis.

We also regularly monitor product end-use applications to anticipate any potential health and safety risks. Each year, we review the human health and environmental risks associated with existing and emerging applications in our polymer and chemicals business. Based on these assessments, we may replace raw materials used in production processes with safer alternatives or prohibit or place conditions on the sale of products into certain end-use applications.

Communicating information about our products and their risks

LyondellBasell generates Safety Data Sheets for all of our products. In 2022, we published approximately 109,000 Safety Data Sheets, available in multiple languages depending on the region of product sale, which include information on product hazards and precautions to ensure safe use.

We also issue declarations for customers on regulatory clearances for our products and their end uses. Most of this information is available on our website at www.lyondellbasell.com under Product Safety & Stewardship. In 2022, we answered more than 80,000 requests from customers, distributors and other stakeholders for regulatory information about our products.

As a participant in the Global Product Strategy (GPS) voluntary program to improve the safety of chemical products during their use and handling, the GPS safety summaries are posted on our website under Product Safety & Stewardship. These summaries provide information about our products including safe uses and applications, physical and chemical properties, human health and environmental effects, potential exposure routes, risk management measures, regulatory information and classification and labeling.

Incidents of non-compliance concerning the health and safety impacts of products and services

In 2022, we had no product recalls and no incidents of non-compliance with regulations and/or voluntary codes concerning the health and safety impacts of our products that resulted in a fine, penalty or warning.



DIVERSITY, EQUITY AND INCLUSION

Diversity, equity and inclusion (DEI) are key drivers to creating more sustainable organizations and a more fair and inclusive world. Inclusive and diverse businesses reap many rewards, from stronger business performance to increased innovation. In fact, organizations with inclusive cultures are 15% more likely to meet or exceed their financial targets, six times more likely to be innovative and eight times more likely to achieve better business outcomes.³ They also benefit from higher levels of job satisfaction, knowledge sharing, trust and engagement among employees.

Sustainable businesses recognize employees of all backgrounds want to work in places where they feel respected, valued and included. Organizations known for their inclusive culture will attract and retain the best talent, setting them up for lasting success. A workforce of employees representing diverse ethnic and social backgrounds also helps these companies better understand their impacts on different communities.

Cultivating a diverse workforce has a powerful impact on advancing sustainability by broadening the range of skills and opinions held by people

at every level of the organization, including those in senior leadership roles. Research has shown gender-diverse boards increase the likelihood of conversations about social issues, climate change, and work/life balance, among other areas.⁴

Our vision for the future is that LyondellBasell is a place where DEI is embedded within our culture as deeply as safety and where we identify the barriers to progress and work to remove them. We aim for our employees to reflect the communities in which we work, and our leadership to reflect our workforce. Our aspiration is to be recognized as an inclusive employer, where leaders embrace a culture of belonging, where our people can bring their entire selves to work, where employees are treated fairly with equal opportunities to advance their careers and where all feel like a valued part of our company family. Our DEI progress enables us to retain and attract top talent and meet the needs of our customers, communities, investors and other stakeholders.

³ Juliet Bourke, Which Two Heads Are Better Than One? How Diverse Teams Create Breakthrough Ideas and Make Smarter Decisions, Australian Institute of Company Directors, 2016.

⁴ <https://www.catalyst.org/research/why-diversity-and-inclusion-matter/>

INTERVIEW WITH OUR EXECUTIVE VICE PRESIDENT, PEOPLE AND CULTURE TRISHA CONLEY

Q: You only recently joined LyondellBasell. What are your first thoughts?

A: I am incredibly excited to be here. This role gives me a chance to help the organization with its cultural transformation as we put a mission-critical focus on reducing GHG emissions, increasing the use of renewable energy sources and working to achieve our circular and low carbon solutions goal. I am also keenly interested in positively impacting diversity, equity and inclusion across the company. The company has already made many positive steps. I am looking forward to continuing to build a world-class People and Culture organization which is viewed as a strong and strategic partner for the leaders of LyondellBasell.

Q: What's your vision of 'thriving societies'? How will the People and Culture organization help to achieve it?

A: As employees, we spend a lot of our time at work, so it is important to have a place



Our DEI goals and programs are about opening doors for everyone and reducing bias. We believe DEI is a strength, helping us achieve our business goals and ensuring our future success.



that is safe, free from discrimination and where people feel like they can bring their whole selves to work. People want to work for purpose-driven companies they can be proud of and that offer an enticing employee value proposition. Finally, how the company gives back to communities is critical. I love the fact that our *Advancing Good* corporate citizenship program is committed to using our global reach to positively impact the world and that our actions help fulfill community needs. Millions of people around the world use our products every day, so we have the potential and responsibility to use this scale and reach for positive change.

Q: How do you believe DEI can help organizations thrive?

A: DEI is absolutely vital to business. After all, the most successful companies mirror the communities in which they operate. Few companies publicly commit to achieve parity goals. Our company's pledge to achieve parity within ten years is impressive and signals our commitment and leadership in DEI. Our DEI goals and programs are about opening doors for everyone and reducing bias. We believe DEI is a strength, helping us achieve our business goals and ensuring our future success. While we have made progress, we still have work to do. As we

go forward, we are mindful that we have to continually evaluate our processes and procedures to ensure we do not become complacent. People want to work in a place where they feel welcome, wanted and valued for their input. Organizations that focus on DEI create an environment where people want to stay and thrive. Inevitably, these companies are among the most successful.

Q: What are some key areas of focus for your team in the near and long term?

A: Our People and Culture team plays a critical role as a strategic partner to all parts of the business. At the end of the day, people are the heart of our company. Our focus, both now and in the future, is on transforming our culture, enhancing our DEI programs, growing our leaders and improving our HR operations and service delivery. To get there, we need to listen to and learn from employees across our organization about how we can attract, retain, develop and motivate our most important assets. We have the opportunity every day to positively impact people's lives. In turn, this improves our culture and our business success. It's all linked, and I look forward to leading the team that can help make this all happen.

OUR GOAL: BY 2032, ACHIEVE GENDER PARITY IN SENIOR LEADERSHIP GLOBALLY AND ENSURE OUR U.S. SENIOR LEADERSHIP REFLECTS THE RATIO OF UNDERREPRESENTED GROUPS IN THE GENERAL POPULATION

In 2022, women represented 22% of global senior leadership roles, which is a 1% increase compared with 2021. In the U.S., 18% of senior leaders were from underrepresented groups in 2022, which is a 1% decrease from the prior year. We are continuing to develop and improve our internal talent programs and, through these efforts, we promoted 16% more women in 2022 than in 2021. Increased promotions of women were the main reason the number of women in senior leadership globally increased in 2022. Additionally, the percentage of diverse employees on our Executive Committee, which reports directly to the CEO, increased from 18% in 2021 to 33% in 2022, and as of February 2023, increased to 40%. Of the 10 members on our Executive Committee, four are women, and together, our CEO and Executive Committee represent six different nationalities.

While we are making significant efforts, our progress in 2022 was negatively impacted by increased attrition of women leaders and leaders from

underrepresented groups, primarily due to the competitive talent market. We regularly analyze retention to understand attrition drivers and to enhance our employee engagement efforts.

We will continue to focus on enhancing our hiring, promotion and retention practices. With respect to hiring, we expanded our existing senior-level hiring practices to a larger group of positions. These practices include broader recruiting efforts, diverse interview panels and candidate slates, standardized interview questions and hiring-manager training.

We recognize that building talent pipelines and transforming culture takes time. We believe with the programs we have implemented, we are on track to achieve our interim goals of increasing the number of female senior leaders globally and the number of underrepresented senior leaders in the U.S. by 50% by 2027, relative to a 2022 baseline.

GLOBAL EMPLOYEE GENDER REPRESENTATION IN SENIOR LEADER AND PROFESSIONAL POSITIONS

2022	Men	Women
Total global employees	81%	19%
Senior leaders	78%	22%
Professionals	67%	33%

U.S. EMPLOYEE ETHNICITY REPRESENTATION IN SENIOR LEADER AND PROFESSIONAL POSITIONS

2022	Non-Underrepresented	Underrepresented
Total U.S employees	67%	33%
Senior leaders	82%	18%
Professionals	65%	35%

Data is as of December 31, 2022 and excludes temporary workers. Senior leaders, for the purposes of our diversity goals, refers to the approximately 400 employees that represent the top six job bands/categories of our employees and executives, excluding our CEO. Professionals refers to the employees in the next eight bands/categories, excluding technical and hourly employees.



ADVANCING LEADERS FROM DIVERSE BACKGROUNDS

To help future leaders from underrepresented groups advance their professional development, we engaged a third-party with expertise in helping leaders develop the skills, peer networks and sponsorship they need to achieve their aspirations for career growth. The program offers virtual, interactive learning experiences specifically designed for Black, Hispanic and Latino and Asian leaders. In 2022, 65 LyondellBasell employees completed the training, which is now a standard offering within our company.

EQUITY IN OPPORTUNITY AND PAY

As part of our commitment to equal pay for work of equal value, we regularly review our global pay practices to assess how women are paid compared to men, globally, and how underrepresented employees are paid compared to their peers in the U.S.

For the second consecutive year, the company completed a pay equity review and performance analysis. For this review, we engage with external experts to advise on pay equity requirements and considerations and to conduct statistical pay analyses based on best practices and industry standards. We utilize a licensed software tool to run multiple regression analyses comparing pay across employee populations while accounting for differences in factors like location, job level and function.

Our most recent pay equity review process found that globally, women are paid equally to men at \$1.00/\$1.00 for adjusted base pay. This same analysis showed that U.S. underrepresented employees are paid \$1.01/\$1.00 compared with non-underrepresented employees. This review demonstrates that we are generally achieving pay equity, meaning employees doing like work of equal or similar value receive equal or similar pay. Our pay policies and

practices are designed to help ensure employees with the same experience and performance doing equivalent work are paid equally.

Our median pay gap and how we are working to eliminate it

We also conducted a global median pay gap analysis, which measures differences in the median pay of one group to another—women versus men and underrepresented groups against the majority—without adjusting for factors designed to create a like-for-like comparison. This analysis is known as the ‘unadjusted’ pay gap.

Our analysis found that the median pay for women is 98% of the median for men (globally), and the median pay for underrepresented employees is 96% of the median for white employees (U.S. only). While we are proud of our actions to ensure equal pay for equal work, the median pay gap confirms that we have a lower representation of women and underrepresented employees in higher-paid jobs and further supports our work toward achieving our corporate DEI goals.

Improving our median pay gap requires a critical focus on accelerating the advancement of women and underrepresented groups in both our

professional employee and senior leader populations. We are committed to regularly analyzing our pay data and addressing gaps, as needed. Our talent programs are focused on providing women and underrepresented employees with professional development and exposure to increase advancement. For example, we have a leadership program that focuses on underrepresented senior leaders and professionals. We are planning to pilot a similar program for women in 2023. Our commitment to this advancement is evidenced by our strong parity and representation goals for senior leaders. We see early evidence of success with increasing promotions for women and subsequent representation. We will continue to analyze our program offerings and make additional adjustments.

While there is much more work to do, significant progress has been made on fair pay at LyondellBasell. We have established our approach to fair pay that aligns to our DEI vision, goals and objectives. We hold ourselves accountable to this approach as well as monitoring and sharing our progress.

PAY EQUITY

Global women to men	U.S. Underrepresented to non-underrepresented
\$1.00/\$1.00	\$1.01/\$1.00

GLOBAL GENDER BASE PAY GAP

Employee category	Women to men median pay gap
All employees	\$0.98
Senior leaders	\$0.96
Professionals	\$0.81

U.S. ETHNICITY BASE PAY GAP

Employee category	Underrepresented to non-underrepresented median pay gap
All employees	\$0.96
Senior leaders	\$1.00
Professionals	\$0.91

Data is as of December 31, 2022 and excludes temporary workers. Senior leaders, for the purposes of our diversity goals, refers to the approximately 400 employees that represent the top six job bands/categories of our employees and executives, excluding our CEO. Professionals refers to the employees in the next eight bands/categories, excluding technical and hourly employees. Pay gap measures the median base pay regardless of work performed.

Equal pay and opportunities

We aim to offer equal opportunities to our employees, enabling them to progress from both a career and pay perspective. We will conduct annual pay reviews to ensure pay fairness, equal pay for similar work and equal access to opportunities for all.

Market competitive

We provide competitive pay opportunities based on role, performance and skills. We ensure job offers are based on the job responsibilities and the job market regardless of a candidate's historical compensation. Further, we conduct regular reviews of the external local market to ensure our pay is in line with local pay levels and practices. We also have modified our promotion practices to ensure pay is consistent for internal candidates and external hires.

Consistent approach and governance

We are committed to applying our pay processes and programs fairly for all our employees and screening for potential bias. We test application of our frameworks and pay processes in each geography to ensure pay is being managed and governed in a consistent and equitable manner. As part of this work, we have developed procedures to conduct internal equity reviews for employees and, when necessary, make compensation adjustments.

Pay clarity

We have established our approach to fair pay and will regularly report on our progress. We are committed to supporting employees in their understanding of our talent and reward framework and processes.

LISTENING TO OUR EMPLOYEES

We believe in the importance of listening to our employees. We invite our employees to help shape our culture and work environment through measures including our biennial employee engagement survey, which was conducted in 2022. Additionally, nearly 400 employees across 21 company sites globally participated in confidential interviews conducted by an external consultant.

Approximately 67% of employees participated in the biennial employee engagement survey. The 2022 results were relatively consistent with 2020, and showed a positive trend in several key areas.

Of particular note:

- Safety was rated the most favorably among topics assessed, followed by engagement and DEI.
- The greatest increases were seen in growth and development (+4%), communications (+3%) and sustainability (+3%).
- Since 2020, the gap in satisfaction between our underrepresented employees and non-underrepresented employees has narrowed, with significant improvement among our Black employees.
- 84% of participants are proud to work for LyondellBasell.

While we did not see any decline in any areas compared with the 2020 survey, there is always room to improve. As in past years, we will look for opportunities to improve in areas that were rated less favorably by our employees.



FOSTERING INCLUSION

Our employee networks help cultivate a community where all employees feel valued and respected. They also give our employees the opportunity to connect with colleagues with similar interests, identities and goals; to network, share ideas and learn; and to foster professional and personal growth.

We launched the LEAD and ASPIRE employee networks in 2022, adding to the initial four we launched in 2021:

- **BELIEVE** - Black Employees Lead, Influence, Empower, Value and Embrace
- **LIFT** - LyondellBasell Inspiring Females Together
- **True Colors** - LGBTQ+
- **YPEN** - Young Professionals Employee Network
- **LEAD** - Latin Employees Advancing DEI
- **ASPIRE** - Asian Pacific Islander Region

Our networks are open to all employees. We have network members at 92% of our global sites, with 47% of members residing outside of the U.S., and 28% joining as allies of underrepresented groups. Senior leaders serve as executive sponsors for each network. About 15% of our global workforce has joined at least one of our employee networks.

In partnership with our *Advancing Good* global corporate citizenship program, our employee networks contributed a total of \$100,000 to dozens of charitable organizations worldwide in 2022. Next year, we plan to increase contributions to \$600,000. Employee networks also support our communities through volunteer activities.

DEI TRAINING

Our company has prioritized and implemented DEI training to accelerate change in our workforce at all levels. In 2022, live DEI training was available to employees worldwide, allowing them to develop skills that will enhance inclusion in our workplace.

In 2022, 32% of employees completed more than 17,000 DEI-related training sessions. This included a mandatory training session for 1,320 people leaders, and 4,900 employees who completed DEI courses voluntarily. We are on track for all of our front-line manufacturing employees to complete DEI training by the end of 2023.

In addition to enterprise-wide training, to help ensure equity in people decisions, hiring managers and people leaders completed required DEI training prior to hiring, succession and performance activities.

SUSTAINABLE PROCUREMENT

Sustainability is an important element of our procurement strategy and is incorporated in our supplier relationship management processes. As a responsible business, we expect our suppliers to comply with applicable laws and internationally recognized standards, conduct business ethically and share the principles set out in our [Supplier Code of Conduct](#).

Our goal

Assess a minimum of 70% of our key suppliers globally using sustainability criteria by 2025.

Our progress

In 2022, we advanced the implementation of our Sustainable Procurement strategy. We further developed our organization and rolled out a Sustainable Procurement training curriculum, training over 250 LyondellBasell procurement professionals globally.

To further our goal to assess our key suppliers using sustainability performance criteria, we utilized EcoVadis assessments and joined Together for Sustainability (TfS). EcoVadis is a globally recognized platform that provides corporate social responsibility monitoring and ratings used by companies to help better understand how their suppliers measure up. Covering environmental, labor, human rights,

and ethical business and supply chain practices, the EcoVadis assessment rates policies, actions and results. It also provides suggestions for improvement in the form of corrective action plans.

TfS is a flagship initiative launched by companies in our industry that helps to drive sustainability in our supply chain through a shared infrastructure. As a member of TfS, LyondellBasell has access to over 10,000 existing EcoVadis supplier sustainability ratings and 700 TfS audits. Participating companies also share best practices to drive continuous improvement.

To make progress toward our 2025 goal, we set a target to assess 470 suppliers globally in 2022. We derived the target from a holistic assessment of our supplier risk profiles (country and industry risk) and procurement risk (spend and category criticality). We exceeded our plan and achieved 140% of our 2022 supplier assessment target.

A supplier whose EcoVadis assessment does not meet our minimum score requirement is given the opportunity to improve performance within an appropriate timeframe. LyondellBasell reserves the right to terminate a supplier relationship if no acceptable improvement is made.



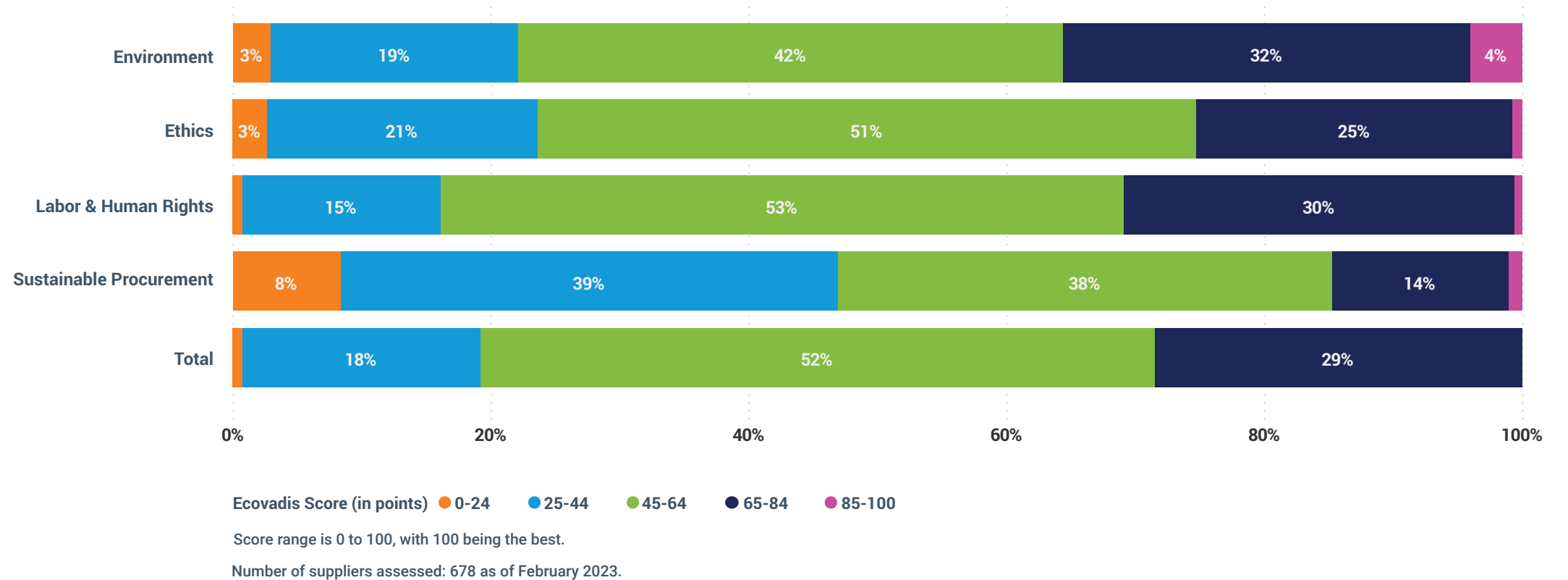
Product Carbon Footprint from suppliers

As the chemical industry works to reduce GHG emissions, LyondellBasell is collaborating through TfS to improve the accuracy and consistency of scope 3 emissions data in the chemical industry. A result of this collaboration is the Product Carbon Footprint (PCF) Guideline, launched by TfS in 2022. This guideline sets out a comprehensive process for supplier PCF calculations and corporate scope 3 GHG emissions associated with purchased goods within the chemical industry.

Global Supplier Diversity Program

To expand our supply chain, foster innovation and support inclusive economic growth, we took initial steps in 2022 to develop a global Supplier Diversity Program. LyondellBasell is committed to supplier diversity by building a strong supplier base giving diverse owned businesses equal access to business opportunities.

ECOVADIS PERFORMANCE OF OUR KEY SUPPLIERS





ADVANCING GOOD

Our global corporate citizenship program, *Advancing Good*, demonstrates our commitment to being a responsible, good neighbor. The program focuses on three key areas of impact: *Advancing Our Communities*, supporting healthy, diverse and dynamic communities; *Advancing Our Planet*, demonstrating our commitment to being leaders in the efforts to end plastic waste and developing sustainable solutions to protect our planet for future generations; and *Advancing Tomorrow's Workforce*, educating, training and preparing tomorrow's workforce to be our future leaders.

Advancing Our Communities: Promoting healthy lives and well-being for all

LyondellBasell employees based in the Netherlands raised funds for brain tumor treatment as part of their participation in the Rotterdam Marathon. Six weeks prior to the marathon, their goal took on new meaning when a dear colleague, Jeroen Breen, sadly passed away from brain disease. Employees laced up their shoes and raised over 11,000 EUR to honor his memory. Richard Roudeix, LyondellBasell president, Europe, Asia, Middle East & International Ventures, said, "Participating in the marathon to help advance brain tumor research will be one of the best

ways for us to pay tribute to Jeroen. He will be greatly missed." The funds from The NM Rotterdam Marathon will help support more effective treatments for brain tumors at the Erasmus Medical Center, one of the most reputable institutions in clinical medicine in Europe.

Elsewhere, LyondellBasell employees in Texas got on their bikes to raise funds for lifesaving programs and research to find a cure for multiple sclerosis (MS). In spring 2022, around 65 Houston-area employees, contractors, friends and families cycled the Bike MS: Texas MS 150. LyondellBasell representatives pedaled their way to a company milestone during their 150-mile, two-day journey from Houston to College Station, surpassing more than \$2 million raised in the company's 24th year participating in the ride. Kim Foley, LyondellBasell executive vice president, Intermediates and Derivatives and Refining, also reached the \$100,000 fundraising milestone after 15 years of riding with the Team LYB. "After two colleagues shared their family members' struggles with MS, I knew I needed to join the ride. It's important for everyone to commit yourself to a cause that speaks to you, set a goal and ask for that help to give back."

PROVIDING URGENT AND NECESSARY AID IN UKRAINE

Advancing Good helped support refugees and people displaced by the war in Ukraine. LyondellBasell donated \$220,000, with \$110,000 going to United States Association for the United Nations High Commissioner for Refugees to provide shelter, emergency relief items, cash assistance, and mental support, and \$110,000 going to the International Medical Corps to support their mobile medical units programs. Additionally, employees from 64 LyondellBasell sites around the world made personal contributions to these organizations. LyondellBasell matched these donations 2:1 totaling more than \$280,000, bringing the total amount given to the emergency response efforts, from the company, to half a million dollars.



LyondellBasell, Channelview Fire Department in Channelview, Texas, and Memorial Hermann Life Flight in Houston launched a new pre-hospital whole blood program to address severe blood loss in emergency settings. Funded by a \$10,000 grant from LyondellBasell and modeled after Memorial Hermann Life Flight's Pre-hospital Blood Product Administration Program, the Channelview Fire Department now carries one unit of o-positive whole blood for patients that experience any medical or trauma-related condition resulting in uncontrolled hemorrhage.

"Our emergency responders are critical to our communities, and vital within our operations at LyondellBasell," said Tony Wood, LyondellBasell Channelview Complex site manager. "We are honored to support the whole blood program and grateful for the sacrifices and relentless efforts our first responders make every day; they are true heroes to our community." Patients can receive the first unit of whole blood from the Channelview Fire Department and in conjunction with Memorial Hermann Life Flight, be transported to the Texas Medical Center via helicopter in preparation for a higher level of care if needed. "It's been a great privilege to help Channelview Fire Department launch their whole blood program," said Rudy Cabrera, Chief Flight Nurse of Memorial Hermann Life Flight. "Not only does the program benefit patients tremendously in the pre-hospital setting, but furthers to serve the community and those in need."

ADVANCING OUR PLANET: PROMOTING A BEAUTIFUL AND HEALTHY ENVIRONMENT

In keeping with the 2022 Earth Day theme, "Invest In Our Planet," LyondellBasell focused its Earth Day activities on meaningful action. The company's aim was to help protect the environment and make progress toward our goal of planting and distributing 6,000 trees across the greater Houston area by the end of 2022. In May, together with Trees For Houston and the Astros Foundation, LyondellBasell young professionals employee network (YPEN) members and Houston Astros pitcher Framber Valdez, gave away 2,500 trees. In October, employees, friends and family from five Houston-area LyondellBasell locations gave away another 2,500 trees in celebration of our annual global day of service, Global Care Day, at the LyondellBasell Center for Petrochemical, Energy and Technology at San Jacinto College in Pasadena, Texas, and planted an additional 900 trees at Herman Brown Park. These two events along with additional planting projects at San Jacinto College achieved the 6,000 tree goal.



Also in October, 11 LyondellBasell employees in India volunteered their time to clean up an area at Fort Raigad, a historic hill standing 4,400 feet (1,356 meters) above sea level. Thanks to their efforts, 35 kg of bottles, straws, bags, cups, lids, wrappers, plastic cutlery and many other plastic items were cleared along the path.

ADVANCING TOMORROW'S WORKFORCE: MEET CHAKEITHA

LyondellBasell invests in training opportunities for the next generation of workers. For many years, our company has been involved in vocational office education programs (VOE) with local high schools. With years and time invested, we know that many high school students are unaware of the career opportunities our industry provides. The exposure to our company they receive through our VOE program can help shape their future career plans, as well as establish success for themselves.

Entering her senior year in 2000, Chakeitha Thornton enrolled in the VOE program at Booker T. Washington High School in Houston. Understanding at a young age the importance of having a good job in a stable industry motivated Chakeitha to graduate from high school as a VOE student with experience working for LyondellBasell. After enrolling in the C. T. Bauer College of Business at the University of Houston as an Accounting major, Chakeitha maintained her employment with the company as a VOE student. For the last 22 years, Chakeitha has had a flourishing career in Finance, Accounting, and Treasury at LyondellBasell and is now in the People and Culture department as a DEI manager.



I had amazing mentors early in my career who believed in me and advocated for me. With their help, I am living the career I always envisioned.

ADVANCING GOOD BY THE NUMBERS

\$11 MM

contributed globally through 1,800 grants

23,286

hours employees spent volunteering

\$900,000

matched through 1,500 employee requests

1,300

pieces of electronic equipment recycled to prevent e-waste

\$697,416

value of volunteer hours served⁵

\$700,000

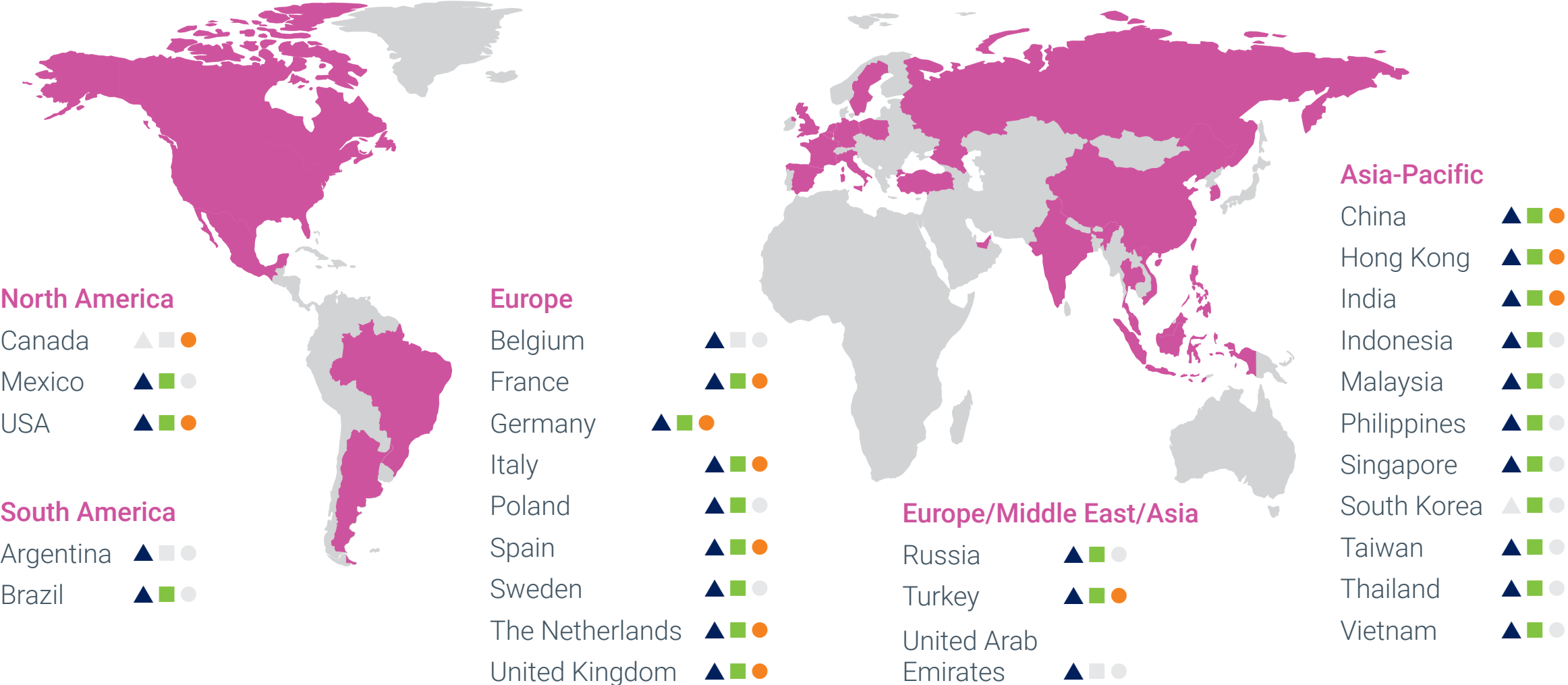
donated for emergency relief and first responder support

⁵ <https://nlctb.org/tips/value-of-volunteer-time/>



ADVANCING GOOD FOOTPRINT

▲ Our Communities ■ Our Planet ● Tomorrow's Workforce





GOVERNANCE

GOVERNANCE

We have a steadfast commitment to doing business in an ethical and responsible manner. This value is reflected in our Code of Conduct, Financial Code of Ethics and participation in the UN Global Compact. We believe that excellence in governance enables us to effectively manage risk, capitalize on business opportunities and return value to our shareholders.

BOARD GOVERNANCE

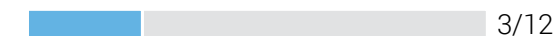
Board structure and independence

Our Board is responsible for general oversight of our management team and the overall course of affairs of LyondellBasell. The Board is comprised of 11 independent directors and our CEO. The Board, acting in the interests of LyondellBasell and taking into account the relevant interests of our stakeholders, supervises and advises our CEO and other executives in managing the day-to-day affairs of the company and setting the direction of the company's business. Major management decisions and LyondellBasell's strategy are discussed with and approved by the Board.

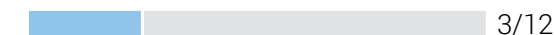


2022 BOARD DIVERSITY SUMMARY

50% Gender or Ethnically/
Racially Diverse Nominees



Women **25%**



Ethnically/Racially Diverse **25%**



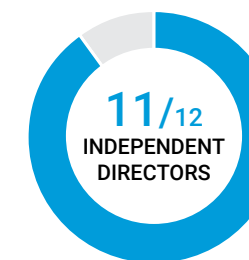
Non-U.S. or Dual Citizen **58%**



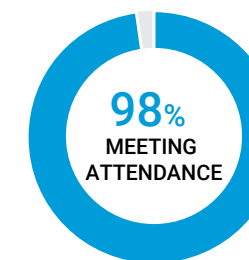
2 women

in Board leadership roles

INDEPENDENCE






ATTENDANCE



Data is as of December 31, 2022.

2022 BOARD EXPERIENCE AND EXPERTISE

	Aigrain	Benet	Bindra	Buchanan	Chase	Dicciani	Dudley	Farley	Hanley	Kamsky	Manifold	Vanacker
 INDUSTRY EXPERIENCE Experience with and understanding of the chemicals and refining industries			●	●		●	●	●		●		●
 HSE EXPERIENCE Experience with social responsibility issues related to health, safety, and the environment			●		●	●	●	●	●	●	●	●
 STRATEGIC PLANNING Knowledge of corporate strategy and strategic planning	●	●	●	●	●	●	●	●	●	●	●	●
 MERGERS & ACQUISITIONS Experience with mergers, acquisitions, and other strategic transactions	●	●	●	●	●	●	●	●	●	●	●	●
 CORPORATE FINANCE Financial expertise and experience with corporate finance	●	●		●	●	●	●	●	●	●	●	●
 EXECUTIVE MANAGEMENT / CEO EXPERIENCE Executive management experience with large or international organizations	●	●	●	●	●	●	●	●	●	●	●	●
 CORPORATE GOVERNANCE Knowledge of corporate governance issues applicable to companies listed on the NYSE	●	●	●	●	●	●	●	●	●	●	●	
 RISK MANAGEMENT Experience identifying, managing, and mitigating key enterprise risks	●	●	●	●	●	●	●	●	●	●	●	●
 PUBLIC COMPANY DIRECTOR Service on the boards of other public companies	●	●	●	●	●	●	●	●	●	●	●	●

DIVERSITY AND DEMOGRAPHICS

Race/Ethnicity												
African American or Black					●							
Alaskan Native or American Indian												
Asian			●									
Caucasian or White	●			●		●	●	●	●	●	●	●
Hispanic or Latino		●										
Native Hawaiian or Pacific Islander												
Gender												
Male	●	●	●	●	●		●		●		●	●
Female						●		●		●		

Data is as of December 31, 2022.

Board Diversity Policy, gender diversity data, tenure, experience

As outlined in our [Corporate Governance Guidelines](#), our Board considers diversity a priority and seeks representation across a range of attributes, including gender, race, ethnicity, nationality, background and expertise.

For more information about our 2023 Board including director independence, tenure and diversity, see our [2023 Proxy Statement](#), pages 10-17.

Board oversight of ESG

Our Board leads our commitment to sustainability and maintains oversight of the company's ESG profile. Management reports on key sustainability topics and initiatives at each regularly scheduled Board meeting, and directors participate in a deep dive on sustainability strategy and actions at least annually. During the Board's annual strategy meeting in July 2022, the Board focused on the company's strategy, progress, and programs related to its goals on climate and the circular economy. The Board's Committees provide guidance regarding specific ESG issues in accordance with their charters and responsibilities. The Compensation and Talent Development Committee is responsible for overseeing our talent management and DEI programs, among other responsibilities. For more information, see our [2023 Proxy Statement](#), pages 26-27.

Management oversight of ESG

At the management level, our CEO oversees the company's ESG profile through regular reporting and discussion on key topics and initiatives among

members of his Executive Committee, comprised of senior executives that lead LyondellBasell's businesses and functions. ESG matters impact, and are impacted by, all of our operations, with each function playing a role in identifying relevant opportunities, managing associated risks, and contributing to our overall sustainability program.

The Executive Committee includes, among others, our Executive Vice President, Sustainability and Corporate Affairs, with responsibility for sustainability strategy and ESG reporting, our Executive Vice President, Circular and Low Carbon Solutions, who is building and leading a scalable, circular and low carbon solutions business, and our Executive Vice President, People and Culture, who is responsible for the company's vision and culture to enhance the employee experience, talent management, employee relations, reward and compensation, and diversity, equity and inclusion. Our Executive Committee meets regularly to review strategies, policies and risks related to sustainability and ESG topics.

In 2022, we promoted our Director, Global Sustainability to the role of Vice President and Chief Sustainability Officer (CSO). The CSO is responsible for the management of sustainability programs, strategy, and reporting, and is supported by a global group of dedicated employees. This group collaborates with leaders across the organization, including members of the Executive Committee and the team that leads our GHG emissions reduction efforts, to bring together the functional expertise and skills needed to achieve our sustainability and ESG objectives.

Health, Safety, Environmental, and Sustainability Committee (HSE&S)

The HSE&S Committee assists the Board in its oversight responsibilities by assessing the effectiveness of health, safety, environmental and sustainability programs and initiatives that support company policies. The specific responsibilities of the committee are summarized below:

HSE

Review and monitor the company’s health, safety and environmental policies and performance results, including processes to ensure compliance with applicable laws and regulations; review with management environment, health, safety, and product stewardship issues that can have a material impact on the company; and review the status of related policies, programs, and practices.

Sustainability

Provide oversight of the company’s sustainability programs, initiatives and activities; review with management relevant sustainability risks and trends; and

monitor the company’s progress on sustainability targets, ambitions and reporting.

Audit

Review and approve the scope of the company’s health, safety and environmental audit program; regularly monitor audit program results; and review and approve the annual budget for the health, safety and environmental audit program.

Risk governance

The company has an Enterprise Risk Management (ERM) organization, with a team dedicated to deploying the enterprise-wide risk management framework. The CEO and General Counsel are responsible for overseeing these risk management programs, including assessing risk tolerances, evaluating whether such tolerances are aligned with the company’s strategic goals and defining our overall risk profile. ERM leads an annual risk workshop with the CEO and his senior leaders to refresh the company’s risk profile.

Together, the participants validate existing enterprise risks (both opportunities and threats), select new and emerging risks to add to the risk register and ensure risk ownership is assigned to the appropriate executives, the Board and Board committees.

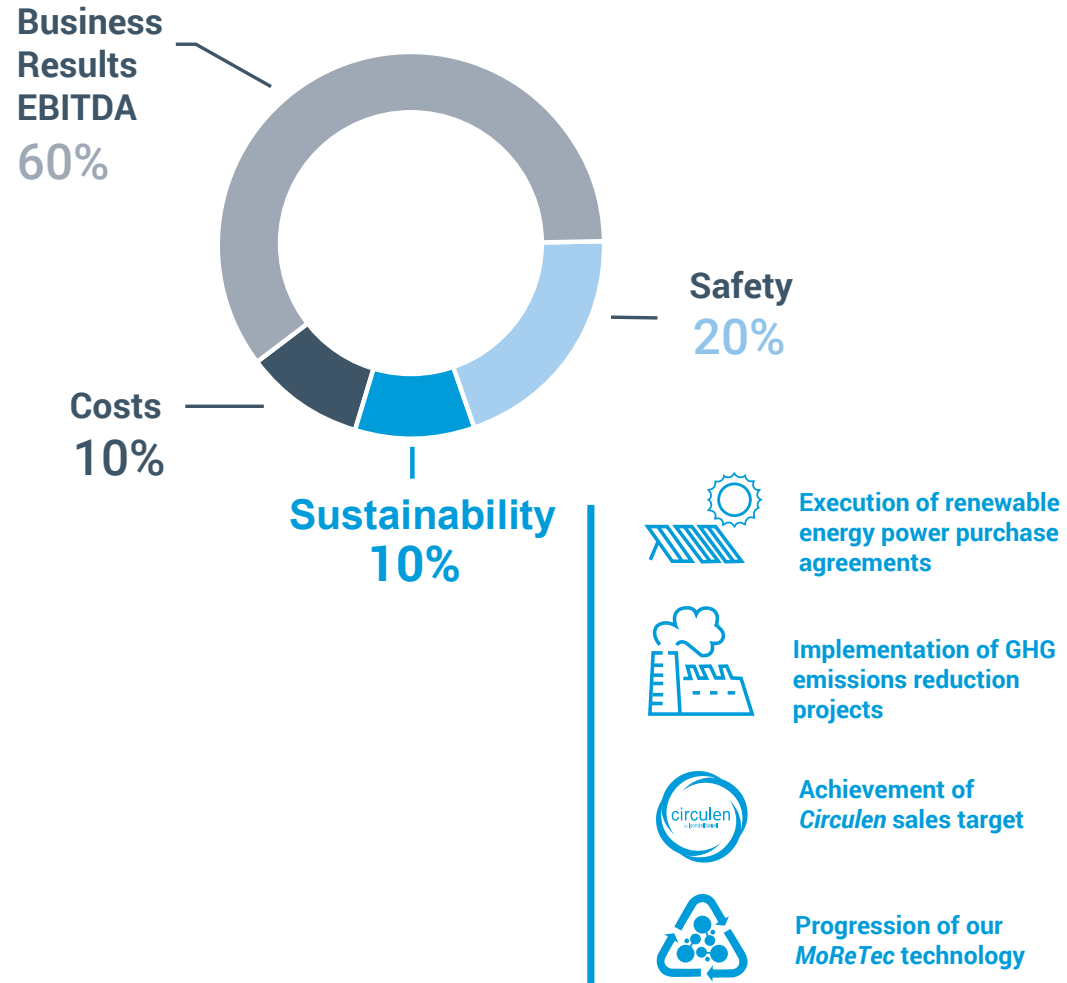
Examples of the company’s enterprise risks include major health, safety, environment and security events, cybersecurity, climate change, DEI and global talent management.

For more information on Enterprise Risk Management, see our [2023 Proxy Statement](#), page 28.

Compensation tied to ESG metrics

To underscore LyondellBasell’s commitment to safety, accountability and timely delivery of our climate and circularity goals, ESG performance accounts for 30% of the total payout under the company’s Short Term Incentive program (20% Safety and 10% Sustainability).

2022 COMPENSATION TIED TO ESG METRICS



ETHICS & INTEGRITY

LyondellBasell upholds high ethical standards and is committed to complying with applicable laws and regulations. Our Compliance Department is governed by a written charter and led by our Chief Compliance Officer (CCO), who has a direct reporting relationship to the LyondellBasell Audit Committee, the CEO and the General Counsel. The CCO discusses the compliance program with the Audit Committee at each of its quarterly meetings, including details on training, metrics and risk assessments. We conduct global anti-corruption, antitrust/competition law and trade sanctions compliance risk assessments at least once every three years with the most recent concluded in 2022. Additionally, our Audit Committee oversees periodic reviews of the Compliance function and its effectiveness, which are conducted by external law firms as well as the company's internal audit function. The most recent assessment of our Compliance function was conducted in 2022.

Codes of Conduct

Our Code of Conduct sets out our expectations on topics such as respecting fellow employees, anti-corruption, conflicts of interest, trade compliance, antitrust and competition law, insider trading, sanctions, misconduct and political donations. Our [Code of Conduct](#) can be found on our website at www.lyondellbasell.com in 17 languages. We take steps to ensure it is fully explained through annual trainings and other internal communications. In addition to the Code of Conduct, our CEO, Chief Financial Officer and Chief Accounting Officer must also adhere to an additional [Financial Code of Ethics](#).

Our [Supplier Code of Conduct](#) outlines our health, safety, environmental, social, governance and ethical expectations for those with whom we do business. We utilize the globally recognized EcoVadis platform to better understand our suppliers' sustainability performance.

We also uphold policies related to, among other things, political contributions and international business transactions. We periodically update these policies and develop new policies according to emerging topics or risks as they arise.

Training on the Code of Conduct and compliance policies

All employees are required to complete training on the Code of Conduct annually and must acknowledge they have read and understand the Code. In 2022, 100% of employees received, and 99.76% completed the training. In past years, approximately 2,200 select contractors received training based on their location, job function and access to sensitive company information. For 2023, we will expand the population to include all active contractors having access to LyondellBasell's computer systems.

The company has established additional compliance policies, forms and procedures related to anti-bribery and corruption, antitrust/competition law and international trade/sanctions. These policies and procedures are routinely reviewed and updated as necessary and made available to all employees in multiple languages. Excluding Code of Conduct training, in 2022, approximately 30% of employees received and completed web-based, virtual or in-person training on targeted ethics and compliance issues including anti-corruption, conflicts of interest, trade compliance and antitrust.



In addition to annual training on the Code of Conduct, in the fourth quarter of 2022, 1,800 employees – based upon location and position – were required to certify compliance with the Code of Conduct by completing the 2022 Annual Code of Conduct Certification. The certification includes questions about compliance with the company’s:

- Conflicts of interest policy.
- Trade compliance efforts.
- Anti-corruption and anti-money laundering efforts.
- Antitrust policy and related competition laws.

Responses to the questions were reviewed on a case-by-case basis, and investigations were conducted into any alleged non-compliance. No violations were identified.

Human Rights

Our [Human Rights Policy](#) is guided by common principles found within the United Nations Universal Declaration on Human Rights and Guiding Principles for Business and Human Rights, and the International Labor Organization’s Declaration on Fundamental Principles and Rights at Work, among others. It sets forth our commitment to respecting human rights throughout our global operations.

Each year we issue a [Human Trafficking and Anti-Slavery Statement](#). In accordance with the requirements of the United Kingdom’s

(U.K.) Modern Slavery Act of 2015 and the California Transparency in Supply Chains Act of 2010, LyondellBasell makes information publicly available with respect to our efforts to ensure slavery and human trafficking is not taking place in any of our supply chains nor in any part of our business.

Conflict Minerals

We comply with conflict minerals laws and regulations and our [Conflict Minerals Policy](#) outlines our approach to sourcing responsibly. We outline the risks and report due diligence actions taken to manage risks with our suppliers in our annual [Conflict Minerals Report](#) filed with the U.S. Securities and Exchange Commission.

Mechanisms for concerns about ethics

We encourage employees to speak up if they have concerns about violations of company policies or the law by reporting the issue to their supervisor or manager, human resources representative or any member of the Legal or Compliance Department. We also offer an [independent whistleblower telephone helpline and website](#), which is available 24 hours a day and in multiple languages to all employees and stakeholders. It is operated by EthicsPoint, a company providing third-party reporting for many global companies. As provided in both our Code of Conduct and our European Union Whistleblower Policy, LyondellBasell prohibits retaliation against people raising concerns and investigates any allegation that such retaliation has occurred.

2022 CONCERNS REPORTED

Discrimination (harassment and retaliation)	52
Misconduct or inappropriate behavior	26
Conflict of interest	15
Environmental protection, health or safety	5
Accounting and auditing	5
Covid 19-related concerns	4
Financial issues	3
Substance abuse	3
Violence or threat	3
Computer, e-mail and internet use	2
Embezzlement and theft	2
Other	20
Total	140

2022 INVESTIGATIONS BY REGION

U.S.	85
Latin America (including Mexico)	6
Asia Pacific	19
Europe	21
Middle East & Africa	9
Total	140

2022 DISCIPLINARY ACTIONS

Counseling	16
Training	6
Warning	7
Third-party relationship terminated	2
Performance improvement plan	1
Termination	5
Total	37

In 2022, we received a total of 140 reports through EthicsPoint, a 4% increase over the prior year. Of the EthicsPoint reports received, 66% were anonymous. Each report which alleges behavior that, if true, would constitute a violation of law or company policy is fully investigated and documented with a written report of the investigation, conclusion and remedial action if any is warranted. Of the allegations received in 2022 and closed as of February 1, 2023, 25% were substantiated, 50% were unsubstantiated, 15% were unresolved, and 10% were not investigated due to insufficient information.

An overview of all investigated matters is presented to the company's Audit Committee at its quarterly meetings. Reports involving the CEO or his direct reports, the General Auditor, or the CCO must be reported immediately to the Audit Committee for review and appropriate action. The Compliance Department also meets quarterly with the Human Resources, Internal Audit and Global Security departments to discuss ongoing investigations and trends.

Conflicts of interest

The company has a Related Party Transaction Approval Policy requiring Audit Committee approval of certain transactions between the company and related parties. In reviewing each transaction, the Audit Committee considers, among other factors, whether the terms of the transaction are fair to the company and whether the transaction would present an improper conflict of interest for any director or executive officer of the company. During 2022, all transactions requiring approval under the policy were reviewed and approved by the Committee. The company also has a Conflicts of Interest Policy that governs the approval process for relationships of officers, directors and employees, that might conflict, or appear to conflict with the best interests of the company. For more information on Related Party Transactions, see our [2023 Proxy Statement](#), pages 33-34.



Anti-Corruption

With a focus on behaving ethically and operating with integrity, LyondellBasell views compliance with all applicable laws as the responsibility of all employees and others with whom we do business. Our [Anti-Corruption Policy](#) makes clear our commitment to detecting and preventing corruption by our employees and those acting on our behalf.

Operations assessed for risks related to corruption

We utilize the Transparency International Corruption Perceptions Index, the Resource Guide to the Foreign Corrupt Practices Act published by the U.S. Department of Justice and the Securities and Exchange Commission, the U.K. Bribery Act Guidance, various guidance provided in the U.S. Department of Justice settlement documents and Evaluation of Corporate Compliance Programs published by the U.S. Department of Justice Criminal Division to assess risks related to corruption in the countries in which we operate. We periodically conduct internal and external audits of the books and records of our subsidiaries, joint ventures and affiliates to ensure compliance with the anti-corruption, anti-bribery and commercial bribery laws.

LyondellBasell has an established due diligence policy for certain third-party relationships including joint venture partners, international representatives, distributors, resellers/traders and technology licensing projects. Corresponding due diligence or risk mitigation procedures are based on the type of service provided and risk footprint. As part of our trade control processes, we also check whether persons, companies or organizations appear on sanctions lists, and whether there are business processes with business partners from or in countries under embargo.



Communication and training on anti-corruption

In addition to the ethics and compliance training all employees are required to complete annually, which addresses anti-corruption policies and procedures, the company also provides tailored anti-corruption training to approximately 4,600 employees each year, including all executive, management and selected additional employees depending on relevant job functions. The training is available in 19 languages, and annual completion rates have historically been 100%, with 2022 being no exception.

Additionally, the Compliance Department delivers quarterly, web-based awareness videos to selected employees on a variety of topics including conflicts of interests, bribery and corruption, and gifts and entertainment. For our joint ventures identified as higher risk, the company works to maintain an ongoing dialogue regarding compliance with anti-corruption laws and has provided targeted informational training to joint venture employees on best practices for compliance, as well as LyondellBasell policies and procedures.

Anti-competitive behavior

LyondellBasell must avoid any agreements with other companies that limit competition in the marketplace. This policy applies to all persons and entities acting for or on behalf

of LyondellBasell, including but not limited to our employees. For more information, see our [Antitrust/Competition Law Policy](#).

The LyondellBasell Compliance Department conducts annual antitrust/competition law training for approximately 1,350 employees, with completion rates near 100%. Employees completing the training are selected based on their role within the company and potential antitrust risks related to their function. The training is available in 19 languages and covers key concepts such as the need to avoid the improper exchange of commercially sensitive information with competitors, and antitrust/competition law offenses, such as price fixing and market allocation.

The Compliance Department's standard annual live compliance training program for new and existing employees includes modules dedicated to antitrust/competition law compliance. Additional, specialized live trainings are provided from time to time to address specific antitrust risks.

Reporting on breaches

In 2022, LyondellBasell had no legal actions pending or completed regarding anti-competitive behavior, violations of antitrust, or monopoly legislation in which the company was identified as a participant.

REPORTING AND DISCLOSURES

UNITED NATIONS FRAMEWORK

UN Global Compact

The United Nations (UN) Global Compact aims to mobilize a global movement of sustainable companies and stakeholders. The UN Global Compact encourages companies to do business responsibly by aligning strategies and operations with Ten Principles on human rights, labor, environment and anti-corruption. LyondellBasell joined in 2020.

UN Sustainable Development Goals

The UN Global Compact encourages companies to advance broader societal goals. The 17 UN Sustainable Development Goals (UN SDGs) serve as a call for action to tackle global challenges by 2030. Alignment of our sustainability strategy with the UN SDGs is detailed in the following list.



We support foodbanks in the communities where we operate through monetary donations, food collection drives and employee volunteerism.



We work every day to protect the health and safety of our employees, contractors and the communities where we operate.



We are committed to educating and training our current and future workforce. Our business is driven by the next generation of Science, Technology, Engineering and Mathematics (STEM) professionals.



We aim to achieve gender parity in senior leadership roles globally by 2032, and increase the number of women senior leaders by 50% globally in the next five years.



We strive to optimize energy consumption in our operations by reducing resource use and GHG emissions. We are working to increase our use of renewable energy.



We believe in integrity, diversity and fairness, and a work environment that is safe, respectful and inspires employees to strive for excellence.



We aim to increase the number of people from underrepresented groups in U.S. senior leadership roles. We are committed to fairness in our pay practices.



We believe transitioning to a circular economy will enable a more sustainable future. We are investing in mechanical and advanced recycling to make plastics a recoverable resource.



We are working to reduce our GHG emissions and deliver solutions which advance our customer's climate ambitions and support the transition to a low carbon economy.



We are committed to helping end plastic waste in the environment and participate in initiatives to reduce, recycle, reuse and repurpose plastic waste.



We are collaborating with our value chain partners on projects to reach the scale and impact needed to address global challenges.

GLOBAL REPORTING INITIATIVE (GRI) INDEX

Statement of use: LyondellBasell has reported the information cited in this GRI content index for the period January 1–December 31, 2022 with reference to the GRI Standards.

GRI 1 used: GRI 1 Foundation 2021.

GRI 2-1

Organizational details

Legal Name: Our legal name is LyondellBasell Industries N.V. (NYSE: LYB). Unless otherwise indicated, the “company,” “we,” “our,” “us” and “LyondellBasell” are used in this report to refer to the businesses of LyondellBasell Industries N.V. and its consolidated subsidiaries.

Ownership and legal form/ Headquarters: [2022 Form 10-K](#), pages 4-21

Countries of Operation: Our principal manufacturing facilities as of December 31, 2022 can be found in our [2022 Form 10-K](#), page 20 “Description of Properties.”

GRI 2-2

Entities included in the organization’s sustainability reporting

The environmental, safety and employee data in this report relate to global operations at our majority-owned or operated manufacturing sites, pipelines and large offices for 2022, unless stated otherwise. Assets that are acquired or divested will be accounted for in our base year GHG emissions in accordance with the Greenhouse Gas Protocol. The narrative may include our non-operated joint ventures. Financial data includes our joint ventures to the extent appropriate under Generally Accepted Accounting Principles in the U.S.

Consolidated Financial Statements are prepared from the books and records of LyondellBasell N.V. under accounting principles generally accepted in the United States (“U.S. GAAP”). Subsidiaries are defined as being those companies over which we, either directly or indirectly, have control through a majority of the voting rights or the right to exercise control or to obtain the majority of the benefits and be exposed to the majority of the risks. Subsidiaries are consolidated from the date on which control is obtained until the date that such control ceases. All intercompany transactions and balances have been eliminated in consolidation.

GRI 2-3

Reporting period, frequency and contact point

Reporting Period: January 1, 2022–December 31, 2022

Frequency of Sustainability Report: Annual

Frequency of Financial Reporting: Our sustainability report covers the same reporting period as in our annual financial report, Form 10-K.

2022 Report Publication Date: April 24, 2023

Contact information: sustainability@lyondellbasell.com

GRI 2-4

Restatements of information

Our 2021 scope 1 and 2 data was adjusted following minor updates to emission factors primarily received from our utility suppliers.

GHG, energy use and air emissions intensity for 2020 and 2021 were adjusted due to updated information from our suppliers.

In order to align with GRI 306 Waste 2000, certain waste streams originally reported as “land disposal” are now reported in the “other” category and have been restated for prior years.

In 2022, adjustments to the waste categories reported under Waste Diverted from Disposal were made to align with GRI 306 Waste 2000.

GRI 2-5

External assurance

PwC performed a limited assurance engagement over our 2022 total energy consumption and scope 1 and scope 2 emissions. The Report of Independent Accountants is on [page 95](#) of this report.

GRI 2-6

Activities, value chain, and other business relationships

Sector, activities, products and services

LyondellBasell is a leader in the global chemical industry. 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 large volumes of liquid and gaseous hydrocarbon feedstocks into plastic resins and other chemicals. Our chemical products tend to be basic building blocks for other chemicals and plastics. Our plastic products are used in large volumes as well as smaller specialty applications. 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 and distillates. We also develop and license chemical and polyolefin process technologies and manufacture and sell polyolefin catalysts.

Supply Chain

We manage our operations through six operating segments. Our reportable segments are:

Olefins and Polyolefins-Americas (O&P-Americas)

Our O&P-Americas segment produces and markets olefins and co-products, polyethylene (PE) and polypropylene (PP).

Olefins and Polyolefins-Europe, Asia, International (O&P-EAI)

Our O&P-EAI segment produces and markets olefins and co-products, PE and PP.

Intermediates and Derivatives (I&D)

Our I&D segment produces and markets propylene oxide (PO) and its derivatives; oxyfuels and related products; and intermediate chemicals, such as styrene monomer (SM), acetyls, ethylene oxide and ethylene glycol.

Advanced Polymer Solutions (APS)

Our APS segment produces and markets compounding and solutions, such as PP compounds, engineered plastics, masterbatches, engineered composites, colors and powders and advanced polymers, which includes Catalloy and polybutene-1. In the fourth quarter of 2022 we embarked on a journey to transform the APS segment. Our goal is to sharpen our focus on customer service and product development to maximize value for our customers and LyondellBasell. With increased autonomy and accountability, we are developing a more agile operating model with meaningful regional and segment growth strategies. As part of this transformation, effective January 1, 2023, our Catalloy and polybutene-1 products will be moved from our APS segment and reintegrated into our O&P-Americas and O&P-EAI segments. This move will allow the APS team to focus on our compounding business.

Refining

Our Refining segment refines heavy, high-sulfur crude oil and other crude oils of varied types and sources available on the U.S. Gulf Coast into refined products, including gasoline and distillates.

Technology

Our Technology segment develops and licenses chemical and polyolefin process technologies and manufactures and sells polyolefin catalysts.

For more information on our business, see our [2022 Form 10-K](#), pages 4-21.

Significant Changes:

We made the decision to exit the synthetic ethanol business in August 2021, resulting in the shutdown of the ethanol unit at our manufacturing site in Tuscola, Illinois, and closure of our Newark, New Jersey site. We continue to produce our *Microthene* low, linear low, and high density PE powder products at the Tuscola site. The permanent closure of the ethanol unit impacted some of our environmental data in 2022. Support for impacted employees includes opportunities for reassignment, separation benefits, and other transition assistance.

GRI 2-7

Employees

As of December 31, 2022, we had 19,451 full-time and part-time employees around the world. Of this total, 8,282 were in the U.S. and Canada and another 8,363 were in Europe. The remainder of our employees are in other global locations. See [page 12](#) of this report for more employee information.

GRI 2-8

Workers who are not employees

In addition to our own employees, we use the services of contractors primarily to assist with non-core business functions.

GRI 2-9

Governance structure and composition

The Board leads our commitment to sustainability and maintains oversight of the company's ESG profile. At the management level, our CEO oversees the company's ESG profile through regular reporting and discussion on key topics and initiatives among members of his Executive Committee, comprised of senior executives that lead LyondellBasell's businesses and functions. For more information about our governance structure, see our [2023 Proxy Statement](#), pages 26-28.

For composition of the Board and its committees, see our [2023 Proxy Statement](#), pages 10-18.

GRI 2-10

Nomination and selection of the highest governance body

Our goal is to have a Board that provides effective oversight of the company through the appropriate balance of experience, expertise, skills, competencies, specialized knowledge, and other qualifications and attributes.

The Board considers diversity a priority and seeks representation across a range of attributes, including race, gender, ethnicity, and nationality. Our Board remains committed to increasing the representation of women in its membership, alongside continued focus on increasing the racial and ethnic diversity of the Board.

For information on our Board nomination process and 2023 Nominees to the Board, see our [2023 Proxy Statement](#), page 10-17.

GRI 2-11

Chair of the highest governance body

Our Board is led by an independent Chair, Jacques Aigrain. For information on Board structure, see our [2023 Proxy Statement](#), page 18.

GRI 2-12

Role of the highest governance body in overseeing the management of impacts

Information on our Board and management oversight of risk and ESG are in our [2023 Proxy Statement](#), pages 26-28.

Stakeholder engagement and consultation is also delegated to business and functional group leaders and is outlined in Stakeholder Engagement on [page 75](#) of this report.

GRI 2-13

Delegation of responsibility for managing impacts

Information on our Board and management oversight of risk and ESG are in our [2023 Proxy Statement](#), pages 26-28.

GRI 2-14

Role of the highest governance body in sustainability reporting

The Health, Safety, Environmental & Sustainability Committee of the Board reviews and approves our Sustainability Report annually.

GRI 2-15

Conflicts of interest

Information on Related Party Transactions and other conflicts and potential conflicts of interest are in our [2023 Proxy Statement](#), pages 33-34.

GRI 2-16

Communication of critical concerns

LyondellBasell does not report on critical concerns due to the confidential nature of this information. Shareholders and other interested parties may communicate with the Board or any individual director. Communications should be addressed to our Corporate Secretary at corporatesecretary@lyondellbasell.com or by mail: LyondellBasell Industries, 4th Floor, One Vine Street, London W1J 0AH, United Kingdom.

GRI 2-17

Collective knowledge of the highest governance body

Information about our 2022 Board's experience and expertise can be found on [page 63](#) of this report. Information about our 2023 Board's experience and expertise can be found in our [2023 Proxy Statement](#), page 11.

GRI 2-18

Evaluation of the performance of the highest governance body

Information about our Board's annual self-assessment process can be found in our [2023 Proxy Statement](#), page 19.

GRI 2-19

Remuneration policies

Information on director and executive compensation can be found in our [2023 Proxy Statement](#), pages 35-36 and pages 45-49.

GRI 2-20

Process to determine remuneration

Information on director compensation can be found in our [2023 Proxy Statement](#), page 35 and executive compensation on pages 45-49.

Information regarding our annual say-on-pay and shareholder outreach can be found in our [2023 Proxy Statement](#), page 41.

GRI 2-21

Annual total compensation ratio

Information on the annual total compensation of the global median employee and compensation of our CEO can be found in our [2023 Proxy Statement](#), page 73 and our [2022 Proxy Statement](#), page 71.

GRI 2-22

Statement on sustainable development strategy

For the annual letter from our CEO regarding our sustainability strategy and approach, see [pages 4-5](#) of this report.

GRI 2-23

Policy commitments

A discussion of our commitment to responsible business conduct including policy commitments can be found in the Ethics and Integrity section of this report, [pages 65-68](#).

Precautionary Principle

As a signatory of the United Nations Global Compact, LyondellBasell affirms Principle 15 of the 1992 Rio Declaration that states “where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.”

GRI 2-24

Embedding policy commitments

A discussion of how we embed policy commitments for responsible business conduct can be found in the Ethics and Integrity section of this report, [pages 65-68](#).

GRI 2-25

Processes to remediate negative impacts

[About LyondellBasell](#)

[Approach to sustainability](#)

[Stakeholder engagement](#)

[Corporate governance](#)

[Charter of the Board HSE&S Committee](#)

[Charter of the Board Compensation and Talent Development Committee](#)

[Charter of the Audit Committee](#)

GRI 2-26

Mechanisms for seeking advice and raising concerns

A discussion of mechanisms for concerns about ethics can be found on [pages 66-67](#) of this report.

GRI 2-27

Compliance with laws and regulations

Although we work hard to reduce our environmental impact, sometimes incidents can occur. We manage our environmental obligations and work diligently to investigate each incident and understand the cause. We then develop an action plan and share learnings throughout the organization to prevent future incidents.

We classify incidents on a scale from 0 to 5, with 5 having the highest impact. We report on Level 2+ environmental incidents, indicating a failure to meet a policy, standard or applicable law due to an unplanned release or discharge into the environment.

Fines and penalties paid to resolve environmental, health and safety enforcement actions is provided below.

	2018	2019	2020	2021	2022
Number of incidents	97	65	76	73	93
Fines and penalties paid (\$)	\$984,640	\$210,165	\$280,615	\$404,594	\$3,990,868

Environmental Incident is defined as an incident resulting in a release or discharge, from a permitted or authorized emission or discharge point, in excess of a permitted or otherwise authorized level that is typically required to be reported to a regulatory or governing body. Data presented reflects the most current data available. Data entered for prior years may be updated in subsequent reports if additional information becomes available.

A substantial portion of the total penalties paid in 2022 were the result of settling a multi-year, industry-wide enforcement initiative brought by the U.S. Environmental Protection Agency regarding the performance of flare control devices. Negotiations lasted several years and a consent decree was finally entered in January 2022 addressing flaring practices at four large manufacturing sites in the U.S., with an amendment entered in September 2022 to include an additional site. The penalties paid for these matters totaled \$3,724,000 of the total amount reported on the previous page.

For more information on legal proceedings related to environmental matters, see our [2022 Form 10-K](#), pages 33-34.

GRI 2-28 Membership associations

LyondellBasell is a member of industry associations that provide a venue for the chemical, plastic and refining industries to lend our voices to issues impacting our industry. While we may not completely agree with every position taken by an association or its members, corporate memberships enable us to voice our support, concerns, perspectives and positions on proposed legislation and regulations.

We also participate in a variety of issue advocacy coalitions and alliances that seek to advance policy proposals focused on key priorities for the chemical, plastic and refining industries and the company. We annually review our memberships in coalitions, alliances and trade associations to assess their business value and alignment with our policies and priorities. The Vice President of Government Relations has oversight of our memberships in trade associations.

The following is a list of our most significant membership associations:

- Alliance to End Plastic Waste
- American Chemistry Council
- American Fuel & Petrochemical Manufacturers
- BusinessEurope
- Cefic (The European Chemistry Industry Council)
- China Petroleum and Chemical Industry Association
- European Petrochemical Association
- International Council of Chemical Associations
- National Association of Manufacturers
- PlasticsEurope
- Plastics Industry Association (U.S.)
- World Plastics Council

GRI 2-29 Approach to stakeholder engagement

Our success depends on building relationships with our stakeholders. We engage with employees and external stakeholders through formal and informal channels to build trust and understanding. Through the exchange of information and collaboration on common goals, we aim to be a responsible, good neighbor in the communities where we operate and contribute to the betterment of society.

Stakeholder group	Type of engagement
Customers	We regularly speak with customers to improve our products, respond to their needs and support sustainability commitments along the value chain. Customer surveys help us find ways to improve our products and customer service. Our sales representatives and technical experts work closely with customers to address concerns and provide product stewardship information. Customers regularly visit our manufacturing sites to review our operations and observe our compliance with international standards.
Employees	We receive input from our employees in many ways, including through the MyVoice biennial employee engagement survey. Employee-wide communications include regular news updates on our intranet site and a weekly global employee newsletter, quarterly newsletters at the major manufacturing sites, social media updates and access to an employee mobile app. Our Employee & Labor Relations group within People and Culture also receives employee feedback or concerns. And, in addition to contacting management or People and Culture employees can anonymously report concerns at any time through EthicsPoint, our third-party ethics helpline.
Government and regulators	We communicate with government, legislative and regulatory officials through issue-specific meetings, industry events and visits to our sites. We respond to public consultations to provide input and share expertise on future legislation or regulation.
Industry associations	We collaborate with industry and value chain partners to advance sustainable solutions. We belong to more than 170 industry associations worldwide, most of which are in the U.S. and Europe. Senior executives and more than 400 employees participate in industry association boards, committees and working groups.
Investors and shareholders	We directly communicate our ESG progress with investors on a regular basis. We also provide periodic updates on our progress through investor conferences, Capital Markets Day events, our website and quarterly earnings communications.
Local Communities	We regularly meet with community members to share information about our facilities and activities, as well as and listen to their concerns. Community leaders, elected officials and the public are invited periodically to tour our sites. In the U.S., 13 of our manufacturing sites have formal Community Advisory Panels or Community Action Committees. These groups represent a cross-section of the community, including local residents living in neighborhoods near our sites and facilities, industry peers, local academia and healthcare, business and civic leaders. We participate in multiple industry associations across the U.S. including economic development corporations, chemical associations, environmental councils, local emergency planning committees and mutual aid organizations.
Non-governmental organizations	We regularly engage with NGOs. These engagements take place through one-on-one discussions with senior leaders, as well as through coalitions that bring together stakeholders on sustainability topics that we advance.
Suppliers	At our manufacturing sites, we regularly engage with our suppliers to achieve our GoalZERO ambitions, with a particular focus on people, product and process safety. Our newly formed Global Sustainable Procurement program seeks to accelerate environmental and social improvements in our supply chain and industry-wide

GRI 2-30

Collective bargaining agreements

As of December 31, 2022, approximately 10% of our employees in the U.S. were subject to collective bargaining agreements. Most of our employees in Europe and Latin America/Mexico, and some of our employees in Asia Pacific are subject to collective bargaining agreements.

GRI 3-1

Process to determine material topics

In 2022, we updated our materiality assessment using a third party to engage a broad range of stakeholders from within and outside our company. We applied a double materiality approach. See [page 14](#) of this report for a discussion of the assessment process.

GRI 3-2

List of material topics

2022 material topics (based on average score high to low)

GHG emissions	Air emissions
Product design and lifecycle management	Natural capital
Ethical corporate behavior	Transparency
Harmful substances management	Workforce Management
Climate change risks & management	Employee diversity & inclusion
Employee health, safety & wellbeing	Community relations
Product & service safety & quality	Governance structures & mechanisms
Water & wastewater management	Labor practices
Waste management	Human rights
Innovation & technology	Customer privacy & data security
Sustainable sourcing	

2021 material topics (reported as high, medium and low)

High	Medium	Low
Business ethics & compliance	Critical incident risk management	Biodiversity & land
Circular economy & sustainable solutions	Data security	Community development
Clean air	Energy	Customer privacy
Climate change	Effluents & Waste	Employee rights
Finding & nurturing talent	Fair & inclusive workplace	Employee wellbeing
Health & safety	Human rights	Governance structures & mechanisms
Plastic waste in the environment	Innovation & technology	Responsible investment
Product responsibility	Responsible business practices	Responsible marketing & sales
	Transparency	Socioeconomic value creation
	Water pollution	Sustainable procurement
		Water use

GRI 201-1

Direct economic value generated and distributed

See Value Generation on [page 13](#) of this report and LyondellBasell Reports 2022 Earnings press release issued February 3, 2023.

GRI 201-2

Financial implications and other risks and opportunities due to climate change

A discussion of climate-related risk and opportunities can be found on [page 34](#) of this report. Our annual CDP Climate Change report and TCFD index are posted on our website at www.lyondellbasell.com under Sustainability Reporting.

GRI 201-3

Defined benefit plan obligations and other retirement plans

We have defined benefit pension plans which cover employees in the U.S. and various other countries. We also sponsor post-retirement benefit plans other than pensions that provide medical benefits to certain of our U.S., Canadian and French employees. In addition, we provide other post-employment benefits such as early retirement and deferred compensation severance benefits to employees of certain non-U.S. countries.

As of December 31, 2022, the projected benefit obligation for our pension plans exceeded the fair value of plan assets by \$662 million. Subject to future actuarial gains and losses, as well as future asset earnings, we, together with our consolidated subsidiaries, will be required to fund the discounted obligation of \$662 million in future years. We contributed \$58 million and \$218 million to our pension plans in 2022 and 2021, respectively. We pay other unfunded postretirement benefits as incurred.

We estimate a contribution of \$69 million to our pension plans in 2023.

For more information on our pension and other post-retirement benefits, see our [2022 Form 10-K](#), pages 99-110.

GRI 205-1

Operations assessed for risks related to corruption

See GRI 409-1 on [page 89](#) of this report.

GRI 205-2

Communications and training on anti-corruption

See [pages 67-68](#) of this report.

GRI 206-1

Anti-competitive behavior

See [page 68](#) of this report.

GRI 207-1

Approach to tax

Our parent company, LyondellBasell Industries N.V. is tax resident in the U.K. and subject to the U.K. tax system. However, LyondellBasell Industries N.V. has relatively minor tax obligations of its own because, as a holding company, it does not conduct any operations. Through our subsidiaries, we have substantial operations world-wide. Income taxes are paid on the earnings generated in various jurisdictions where our subsidiaries operate, notably in the U.S., The Netherlands, Germany, France, and Italy where we have significant operations. Similarly other tax obligations are primarily incurred and paid in the countries in which we operate.

We are committed to observing all applicable laws, rules, regulations, reporting and disclosure requirements as a result of our business presence and transactions and acting with integrity with respect to all tax matters including our interactions with governments and taxing authorities. In order to meet these commitments, we recognize the importance of effective tax governance and have adopted a framework of processes and controls to effectively manage our tax obligations, as discussed further below.

We structure our tax activities to control tax costs and seek tax efficiency in accordance with the laws, respecting the laws' intended purpose and recognizing the laws do allow for appropriate tax relief. We work with our internal stakeholders to provide clear, timely, relevant and business focused tax advice. Tax strategy and related actions are reviewed on an ongoing basis by the Chief Financial Officer (CFO), Senior Vice President of Tax, and other senior personnel. Significant tax actions and recommendations are reviewed by the Board, or a committee thereof, including the Audit Committee, as appropriate.

Our 2022 U.K. Tax Strategy is available on our website at www.lyondellbasell.com under Corporate Governance.

GRI 207-2

Tax governance, control, and risk management

We are committed to filing timely and accurate tax returns and disclosures that reflect our financial obligations to the jurisdictions in which we do business, and we pay our tax obligations on a timely basis, both of which require adequate tax governance.

Tax governance is part of the company's finance function and is ultimately the responsibility of the CFO supported by the Senior Vice President of Tax and their direct and indirect reports. The Board, or committees thereof, is regularly informed of any notable tax matters including tax risks, effective tax rate and matters that could materially impact the company's financial statements.

Effective tax governance at LyondellBasell includes maintaining appropriate processes, procedures, documentation, and controls with respect to tax compliance and reporting, tax planning and tax advice, tax audits and dispute resolution, and ensuring senior personnel with the appropriate skill and experience are involved in key tax decisions. We employ professional care and judgment and supplement our expertise by seeking out advice from reputable external advisors, as appropriate, to have reasonable certainty in tax positions we adopt, and to appropriately assess tax risks and ensure our compliance with applicable laws, rules, regulations, and reporting and disclosure requirements. We monitor global legislative changes and other external trends that could impact our reporting requirements, processes and control environment.

We have established a transfer pricing policy for cross-border intra-group transactions requiring them to be conducted and priced on an arm's-length basis with appropriate and timely supporting documentation. Further, we have an established policy to require intercompany financial transactions and corporate restructurings, including those that are tax planning related, to obtain prior approval of the CFO, CLO or their designees.

Our Code of Conduct embodies our dedication to conducting business ethically and responsibly and to complying with applicable laws and regulations. Employees can report concerns about violations of company policies or the law by reporting the issue to their supervisor or manager, People and Culture representative, or any member of the Legal or Compliance Department. We also offer an independent whistleblower telephone helpline and website operated by EthicsPoint, which is available 24-hours a day and in multiple languages.

GRI 207-3

Stakeholder engagement and management of concerns related to tax

We seek to maintain open and cooperative working relationships with the taxing bodies in the jurisdictions in which we operate, provide timely responses to inquiries, and resolve issues in a timely manner. In addition, we aim to constructively and proactively resolve disputes where our views on the appropriate tax treatment may differ from the tax authorities and judiciously pursue litigation where other administrative means are not effective.

We advocate directly, as appropriate, and through industry associations for balanced, stable and predictable tax policy supporting our economic interests and tax strategy tenets, allowing us to remain globally competitive while appropriately supporting the economic development of the communities where we operate. These activities are governed by our approach to public policy and political engagement.

We pursue available tax incentives, including research and development related incentives, tax deductions, credits, abatements and similar when evaluating project economics with respect to business initiatives, which help to finance our capital expansion projects and other initiatives. Our

projects and resulting business activities provide jobs for our neighbors, support local businesses and strengthen our communities with increased tax revenues across the region.

We provide informative and balanced disclosure in communicating our tax affairs to our customers, investors and the general public. For more information on income taxes, see our [2022 Form 10-K](#), pages 114-119.

Environmental

GRI 3-3

Management of material topics

A discussion of our management approach to environmental topics can be found on [pages 27-40](#) of this report.

A list of our quality system certifications including the International Organization for Standards (ISO), International Automotive Task Force (IATF), A2LA (American Association for Laboratory Accreditation) and the Responsible Care Management System (RCMS) can be found on our website at www.lyondellbasell.com under Quality Systems.

GRI 301-1

Materials used by weight or volume

Non-renewable materials

We produce ethylene and propylene at our olefins plants. The primary raw materials used in our Americas olefin facilities are natural gas liquids or NGLs (ethane, propane and butane) and heavy liquids. Heavy liquids include crude oil-based naphtha and other refined products, as well as condensate, a very light crude oil resulting from natural gas production. The primary raw material used in our European olefin facilities is naphtha; however, we also have the capability to use other feedstocks, such as liquified petroleum gases or LPGs (propane, butane and heavier hydrocarbons).

We use ethylene and propylene to make a variety of chemical products and derivatives, including polymers such as PE and PP, and intermediates and derivatives such as PO. We also convert PP into PP compounds.

Propylene, isobutane or mixed butane, ethylene and benzene are the primary raw materials used in the production of PO and its co-products. We produce PO through two distinct technologies, one of which yields tertiary butyl alcohol (TBA) as the co-product and the other of which yields styrene monomer (SM) as the co-product. The two technologies are mutually exclusive with dedicated assets for manufacturing either PO/TBA or PO/SM. We consume a significant portion of our internally-produced

PO in the production of PO derivatives.

PO and derivatives are used in a variety of durable and consumable items with key applications such as polyurethanes used for insulation, automotive/furniture cushioning, coatings, surfactants, synthetic resins and several other household usages. We constructed a world-scale PO/TBA plant in Channelview, Texas, which was commissioned in March 2023. This plant has the capacity to produce 470 thousand tons of PO and 1.0 million tons of TBA per year.

TBA is used to manufacture methyl tertiary butyl ether (MTBE) and ethyl tertiary butyl ether (ETBE), also called oxyfuels. Both are used as high-octane gasoline components that help gasoline burn cleaner and reduce automobile emissions. Our ETBE is partly made from renewable feedstocks. We will continue to explore opportunities to expand on our offering of renewable-based product solutions.

The principal materials used in the production of our compounding and solutions products are PP, PE, polystyrene, nylon and titanium dioxide. The principal raw materials used in the production of our advanced polymers are ethylene, propylene and butene-1.

We operate one refinery, located in Houston, Texas. It is a full conversion refinery designed to refine heavy, high-sulfur crude oil. U.S. production is predominantly light sweet crude and much of the heavy crude has generally been imported from Canada, Mexico and other global producers. In April 2022, we announced our decision to cease operation of our Houston refinery no later than the end of 2023. Our exit from the refining business progresses our GHG emission reduction goals, and the site's prime location gives us more options for advancing our future strategic objectives, including circularity.

Recycled and renewable-based materials

One of our sustainability goals is to produce and market at least 2 million metric tons of recycled and renewable-based polymers annually by 2030, which represents approximately 20% of our 2022 global sales of polyethylene and polypropylene. In 2021, we launched our *Circulen* family of products that support a low carbon, circular economy and meet the growing market demand for circular and sustainable solutions.

Since 2019, we have produced and marketed products with more than 175,000 metric tons of recycled and renewable content.

See [pages 18-20](#) of this report for discussion of our recycled and renewable-based products.

Energy

GRI 3-3

Management of material topics

GRI 302-1

Energy consumption within the organization

GRI 302-3

Energy intensity

GRI 302-4

Reduction of energy consumption

See [pages 32](#) and [35](#) of this report.

Water and Effluents

GRI 3-3

Management of material topics

See [pages 38-39](#) of this report.

GRI 303-1

Water as a shared resource

GRI 303-3

Water withdrawals

GRI 303-4

Water discharge

GRI 303-5

Water consumption

See [pages 38-39](#) of this report.

Biodiversity

GRI 3-3

Management of material topics

GRI 304

See [page 40](#) of this report.

Emissions

GRI 3-3

Management of material topics

GRI 305-1

Direct (Scope 1) GHG emissions

GRI 305-2

Energy indirect (Scope 2) GHG emissions

GRI 305-3

Other indirect (Scope 3) GHG emissions

GRI 305-4

GHG Emissions Intensity

GRI 305-5

Reduction of GHG emissions

For GHG emissions, see [page 35](#) of this report.

LyondellBasell considers the principles and guidance of *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, Revised Edition*, and *GHG Protocol Scope 2 Guidance: An amendment to the GHG Protocol Corporate Standard* (collectively referred to as the "Protocol") developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) to collect, calculate and report GHG emissions. LyondellBasell utilizes the Protocol for definitions, calculation methodologies and calculation results discussed in this document unless explicitly stated otherwise.

GHG emissions quantification is subject to significant inherent measurement uncertainty due to the variability of GHG emissions factors that are used in mathematical models to calculate GHG emissions, and the inability of these models, due to incomplete scientific knowledge and other factors, to accurately measure under all circumstances the relationship between various inputs and the resultant GHG emissions. Environmental and energy consumption data used in GHG emissions calculations are subject to inherent limitations, given the nature and the methods used for measuring such data. The selection by management of different but acceptable measurement techniques could have resulted in materially different amounts or metrics being reported.

LyondellBasell accounts and reports its Scope 1 and 2 emissions under the operational control approach as defined in the Protocol, which includes operations over which we, or one of our subsidiaries, have operational control. Our reported metrics includes our manufacturing sites, pipelines, large regional offices (collectively referred to as "sites") and excludes small regional offices which are defined as those with energy consumption lower than a 3,500 gigajoules threshold.

Scope 1 and 2 emissions are inclusive of the main gases considered under the Protocol and include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and industrial gases such as hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs). The other three gases considered – perfluorocarbons (PFCs), nitrogen trifluoride (NF₃), and sulfur hexafluoride (SF₆) – are not emitted at LyondellBasell sites. The CO₂ equivalent emissions utilize Global Warming Potentials (GWPs) defined by the Intergovernmental Panel on Climate Change's (IPCC) Fifth Assessment Report (AR5 – 100 year). CO₂ equivalent emissions are calculated by multiplying actual or estimated energy and fuel usage or refrigerant gas loss by the relevant emission factor and GWP. All emission factors are updated annually where applicable.

LyondellBasell maintains an energy and environmental inventory system to collect data from all our sites included in our accounting and reporting scope. All sites are required to report on-site energy production and energy consumption per operating plant on a monthly basis. Sites enter into this system the amounts of electricity and steam produced on-site, along with the quantities of fuels used by fuel type, either for the production of energy or direct heat uses in a process. Data on process-related emissions and fugitive emissions are entered directly in the system. Energy procurement data, including electricity and steam purchased, is obtained through our Utilities Procurement department based on purchase records e.g. utility invoices, for each site. LyondellBasell may purchase electricity or steam that is used by on-site third party users due to common transport header. In this event, the third party's use is deducted from the aggregate invoice. The quantity transferred to the third party is documented and invoiced to them.

Our inventory system calculates emissions in metric tons of CO₂ equivalent using:

- Emission factors per type of fuel for emissions from the combustion of fuels onsite (Scope 1)
- Emissions resulting from venting, flaring as well as other process-related activities which include,

but are not limited to, emissions from wastewater treatment (WWT) activities and peroxide decomposition byproducts, at LyondellBasell's sites. (Scope 1)

- Emissions resulting from fugitive emissions at LyondellBasell's sites (Scope 1)
- Emission factors for the electricity and steam procured offsite from third party entities (Scope 2)

LyondellBasell uses emission factors to determine GHG emissions from specific activities such as combustion of different fuels. These factors are primarily referenced from the *American Petroleum Institute's Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry, 2021*. Emission factors for energy procured offsite from third parties are generally provided by energy suppliers. If they are unavailable, emission factors are obtained or estimated using other sources, such as state or national emission factors from national regulators of the International Energy Agency. LyondellBasell calculates and reports on our Scope 2 emissions using both the market-based approach and location-based approach. The market-based approach is used for target setting, thus reflecting the emission intensity of the energy delivered by our suppliers rather than the average emission intensity of grids on which our energy consumption occurs.

Scope 1 emissions are compiled from the sum of emissions from the combustion of fossil fuels from stationary equipment and machinery used at LyondellBasell sites, emissions resulting from venting, flaring, and other process-related activities, and other fugitive emissions related to the replenishment of refrigerants. Direct emissions associated with the sale of energy generated from our own operations to another company are not deducted/netted from Scope 1, in accordance with the recommendations of the Protocol. Combustion related to emissions from LyondellBasell owned or leased motor vehicles, and from non-stationary leased and rented equipment such as temporary air compressors and pumps, welding machines, and mobile light plants used onsite are excluded from our scope 1 GHG emissions inventory as they are estimated to be non-material.

Scope 2 emissions are compiled from electricity and steam procurement data, with a location-based or market-based emission factor then applied. LyondellBasell used Guarantees of Origin (GOs) and Renewable Energy Credits (RECs) during 2022 to contractually procure renewable energy in relation to our manufacturing sites in Brazil and Sweden. Any remaining electricity not associated with a GO or REC was converted to emissions using the Protocol emission factor hierarchy. Emissions from district heating and cooling, cooling water and chilled water purchased from third-party suppliers, and compressed air or nitrogen purchased from third party suppliers are excluded from our scope 2 GHG emissions inventory as they are estimated to be non-material.

The calculation of LyondellBasell's Scope 3 emissions is based on *The Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard and The Guidance for Accounting and Reporting Corporate GHG Emissions in the Chemical Sector Value Chain (WBCSD)*. The Scope 3 emissions are calculated by category in accordance with the guidelines of the GHG Protocol Standard (at least "minimum boundaries").

Scope 3 category	Methodological approach	Methodological approach
Purchased goods and services	Average data	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 were sourced from internal and customer LCA studies, and complemented by different commercial and public data sources, including ecoinvent, Gabi, PlasticsEurope, and regional regulatory databases.
Capital goods	Spend based	Data relating to capital expenditures for property, plant and equipment for the year ended December 31, 2022, was used as the calculation basis, reflecting the spend on capital projects, equipment upgrades and replacement.
Fuel-and-energy-related activities (not included in Scope 1 or 2)	Average data	Data Quantity (mass and volume) of fuels used in our operations were obtained from our internal management systems. Emission factors were sourced from different commercial and public data sources, including ecoinvent, Gabi, PlasticsEurope, and regional regulatory databases.
Upstream transportation and distribution	Distance based	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 were sourced primarily from the GLEC framework for the chemical industry that was developed in a joint study led by Cefic and the Smart Freight Centre.
Waste generated in operations	Average 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 were sourced from different commercial and public data sources, including ecoinvent, Gabi, PlasticsEurope, and regional regulatory databases.

Scope 3 chart continues on the following page.

Business travel	Distance based	LyondellBasell's third-party travel provider supplied emissions data resulting from our business travel arrangements. Excluded from this data set are business travel using private vehicles or rental cars into account, or where employees have booked travel outside of the corporate travel system. These emissions are considered immaterial when measured against the whole of our scope 3 emissions.
Employee commuting	Average data	Data on regional employee numbers were compiled from our internal management systems. The approach taken was to estimate emissions based on regional average commuting modes, and applying emission factors specific to each commuting mode. Emission factors were sourced from regional databases.
Upstream leased assets	N/A	LyondellBasell does not lease any significant upstream assets.
Downstream transportation and distribution	Distance based	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 were sourced from the GLEC framework for the chemical industry that was developed in a joint study led by Cefic and the Smart Freight Centre. For some transport modalities, we receive GHG data directly from our freight supplier, using the same GLEC methodology.
Processing of sold products	N/A	LyondellBasell does not calculate scope 3 emissions linked to the processing of sold products. Given the many end use applications for our products, and as stated in the WBCSD Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain, "chemical companies are not required to report scope 3, category 10 emissions, since reliable figures are difficult to obtain due to the diverse application and customer structure". 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	Average data	Data Quantity (mass and volume) of fuel products from our refinery operations and oxyfuels business, was compiled from our internal management systems. Emission factors were sourced from different commercial and public data sources, including ecoinvent, Gabi, PlasticsEurope, and regional regulatory databases.

End of life treatment of sold products	Average data	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, Gabi, PlasticsEurope, and regional regulatory databases. 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.
Downstream leased assets	N/A	LyondellBasell does not lease any significant downstream assets.
Franchises	N/A	LyondellBasell has no franchised businesses or assets.
Investments	Spend based	Data Primary data relating to our equity investments was used as the calculation basis, reflecting our equity investments as of December 31, 2022. CO ₂ equivalent emissions were calculated on the basis of our equity investments using the GHG Protocol Scope 3 calculator.
Other (upstream)	N/A	LyondellBasell does not have any further upstream emissions to report.
Other (downstream)	N/A	LyondellBasell does not have any further downstream emissions to report.

GRI 305-6 Ozone – depleting substances (ODS)

GRI 305-7

NO_x, SO_x and other emissions

For other air emissions see [page 37](#) of this report.

Waste

GRI 3-3

Management of material topics

See [page 40](#) of this report.

GRI 306-3

Waste generated

Waste by type (thousand metric tons)

	2018	2019	2020	2021	2022
Total waste	1,998.4	1,881.5	1,962.2	1,883.4	1,343.4
Hazardous waste onsite	919.1	883.6	852.6	882.2	764.1
Hazardous waste offsite	392.6	325.8	371.3	391.7	322.5
Non-hazardous waste onsite	471.5	497.6	600.8	459.6	136.9
Non-hazardous waste offsite	215.2	174.5	137.4	149.9	119.9

GRI 306-4

Waste diverted from disposal

In 2022, adjustments to waste categories were made to align with GRI 306 Waste 2000.

Hazardous waste onsite diverted from disposal (thousand metric tons)

	2022
Total	0.20
Preparation for reuse	0
Recycling	0.14
Other recovery operations	0.06

Hazardous waste offsite diverted from disposal (thousand metric tons)

	2022
Total	11.95
Preparation for reuse	0.04
Recycling	11.79
Other recovery operations	0.12

Non-hazardous waste onsite diverted from disposal (thousand metric tons)

	2022
Total	0.14
Preparation for reuse	0.05
Recycling	0.09
Other recovery operations	0

Non-hazardous waste offsite diverted from disposal (thousand metric tons)

	2022
Total	42.32
Preparation for reuse	0.16
Recycling	41.65
Other recovery operations	0.52

GRI 306-5

Waste directed to disposal

In order to align with GRI 306 2000, certain waste streams originally reported as “land disposal” are now reported in the “other” category and have been restated for prior years.

Hazardous waste directed to disposal onsite (thousand metric tons)

	2018	2019	2020	2021	2022
Total	919.1	883.6	851.9	881.9	763.9
Landfilling	0	0	0	0	0
Incineration with energy recovery	0	0	0	0	11.9
Incineration without energy recovery	0	0	0	0	0
Other disposal operations	919.1	883.6	851.9	881.9	752.0

Hazardous waste directed to disposal offsite (thousand metric tons)

	2018	2019	2020	2021	2022
Total	385.2	319.5	364.0	383.7	310.6
Landfilling	0.9	1.1	1.2	4.1	3.4
Incineration with energy recovery	231.9	183.8	206.7	200.5	136.6
Incineration without energy recovery	2.7	3.4	3.8	3.1	6.8
Other disposal operations	149.8	131.2	152.3	175.9	163.8

Non-hazardous waste directed to disposal onsite (thousand metric tons)

	2018	2019	2020	2021	2022
Total	471.0	495.7	600.6	459.3	136.8
Landfilling	0.5	38.7	38.7	38.6	38.6
Incineration with energy recovery	0	0	0	0	0
Incineration without energy recovery	0	0	0	0	0
Other disposal operations	470.4	457.0	561.9	420.7	98.2

Non-hazardous waste directed to disposal offsite (thousand metric tons)

	2018	2019	2020	2021	2022
Total	151.4	80.9	79.7	96.0	77.6
Landfilling	115.5	53.3	50.5	49.9	49.1
Incineration with energy recovery	7.8	7.5	6.4	11.8	8.7
Incineration without energy recovery	0.04	0.16	0.17	0.17	0.50
Other disposal operations	28.1	19.9	22.6	34.1	19.3

GRI 307-1

Non-compliance with environmental laws and regulations

See GRI 2-27 Compliance with laws and regulations on [page 74](#) of this report.

Supplier Environmental Assessment

GRI 308-1

New suppliers that were screened using environmental criteria

GRI 308-2

Negative environmental impacts in the supply chain and actions taken

See Sustainable Procurement, [pages 55-56](#) of this report.

Employment

GRI 3-3

Management of material topics

Our success as a company is tied to the passion, knowledge and talent of our global team. We believe in integrity, diversity and fairness, and we focus on creating a work environment that is safe, respectful and inspires employees to strive for excellence.

We recognize that individuals cannot succeed alone; we believe in the power of many and place a strong emphasis on teamwork. LyondellBasell provides all workers with fair wages and upholds all applicable fair wage laws, wherever we work. We pay wages that meet or exceed the legally required wage or local industry standard. We reward performance based on personal, team and company results.

We engage in open and ongoing dialogue with employees and their representatives to ensure a proper balance between the best interests of the Company and its employees. In several of our locations, we collaborate with employee representatives on initiatives such as health and safety.

We use the services of contractors, primarily to assist with non-core business functions, and we require that all contractors adhere to our Operational Excellence standards and GoalZERO, a comprehensive program to protect the health and safety of our employees and contractors.

More information about our employees can be found on [pages 12](#) and [52-53](#) of this report. Our EEO-1 data is reported annually on our website at www.lyondellbasell.com under Sustainability Reporting.

GRI 401-1

New employee hires and turnover

New employee hires		Turnover	
	2022		2022
Global (#)	2,740	Global (#)	2,323
Rate	14.2%	Rate	12.0%
Average headcount	19,328	Average headcount	19,328
U.S./Canada	1,370	U.S./Canada	1,204
Rate	16.6%	Rate	14.6%
Europe (#)	834	Europe (#)	726
Rate	10.0%	Rate	8.7%
Latin America (#)	312	Latin America (#)	168
Rate	35.0%	Rate	18.9%
Asia Pacific (#)	223	Asia Pacific (#)	225
Rate	12.4%	Rate	12.6%
Middle East & Africa (#)	1	Middle East & Africa (#)	0
Rate	3.3%	Rate	0.0%
Age group		Age group	
<30 (#)	1,177	<30 (#)	634
Rate	47.0%	Rate	25.3%
Average headcount	2,503	Average headcount	2,503
30–50 (#)	1,337	30–50 (#)	984
Rate	12.8%	Rate	9.4%
Average headcount	10,437	Average headcount	10,437
>50 (#)	226	>50 (#)	705
Rate	3.5%	Rate	11.0%
Average headcount	6,387	Average headcount	6,387
Gender		Gender	
Men (#)	2,074	Men (#)	1,831
Rate	13.3%	Rate	11.7%
Average headcount	15,613	Average headcount	15,613
Women (#)	665	Women (#)	491
Rate	17.9%	Rate	13.2%
Average headcount	3,711	Average headcount	3,711
Unallocated	1	Unallocated	1
Rate	24.2%	Rate	24.2%
Avg Headcount	4	Avg Headcount	4

GRI 401-2

Benefits provided to full-time employees that are not provided to temporary or part-time employees

Full-time and part-time employees receive a wide variety of benefits based on geographic location, applicable local and national law, and labor or works council agreements.

Employees at our major offices and manufacturing sites receive competitive benefits which may include, depending on location and employment status, the following: basic health and welfare benefits, including medical coverage; life and accident insurance; business travel accident insurance; disability protection; retirement, savings and pension plans; share programs; and paid vacation, holidays and personal leave.

The Employee Assistance Program is available to all employees globally. The program helps employees be more successful meeting their responsibilities at home and at work. It offers tools and resources on a variety of topics, including resiliency, emotional wellness, workplace success, work-life balance, personal and family goals and good health. The Employee Assistance Program also helps with referrals to financial or legal resources. Services are available at no cost to employees 24 hours a day, 7 days a week.

In 2021, LyondellBasell adopted a global remote work policy that allows many employees whose jobs are suitable for telecommuting to work from home or an alternate work site up to two days per week as part of our ongoing efforts to implement changes that better promote wellness and balance for all employees. We continued to support workplace flexibility in 2022 as a result of feedback we received from employees. Based in part on data from employee surveys, we enhanced our workplace flexibility initiative in early 2023 by offering up to three remote days per work week. These changes have helped to attract and retain employees. We will continue to study the effectiveness of this policy and will make changes, where necessary, to support business needs.

In the U.S., employees can purchase additional health benefits and insurance coverage at lower group rates. They also can contribute to a tax-free Health Care Flexible Spending Account for reimbursement of certain medical expenses as well as a Dependent Day Care Flexible Spending Account for child-care costs.

Reward and recognition

Exceptional performance, dedication to safety, attendance and years of service are recognized in many ways, including annual bonuses and special cash awards; share points that may be redeemed for merchandise; awards based on years of service; and our corporate Excellence Awards, which are the highest honor an employee can receive.

Global family-friendly programs

Our Global Family-Friendly programs include paid parental leave, an adoption reimbursement, and providing all employees globally with a minimum of 10 paid vacation or personal leave days. U.S. employees may also take advantage of the Caregiver Support Program which includes back up child and elder care.

GRI 401-3

Parental leave

Employees across the world who bring a child into their family by birth, adoption or foster care are eligible for parental leave, as allowed by applicable local and national law. In the U.S., employees and spouses enrolled in a company medical plan have access to fertility benefits, and we have a parental leave policy that offers paid leave for the birth of an employee's child, the placement for adoption of a child in an employee's home, and foster care or adoption of a child. In addition to short-term disability benefits, as applicable, our global parental leave policy was expanded in January 2023 to provide seven weeks of paid parental leave per 12-month period to all eligible employees who become parents. The benefit is paid at 100% of the employee's regular base pay (less withholdings and excluding overtime, shift differential, premiums, bonuses, commissions or other allowances) on the date leave begins.

Occupational Health and Safety

GRI 3-3

Management of material topics

GRI 403-1

Worker training on occupational health and safety

GRI 403-2

Hazard identification, risk assessment and incident investigation

See [pages 43-46](#) of this report.

GRI 403-3

Occupational health services

Medical surveillance, an analysis of health information to identify workplace problems, is designed to detect potential workplace hazards before health effects can occur. We provide targeted comprehensive medical monitoring services to assess employees exposed, or potentially exposed, to occupational hazards. Employees have access to medical surveillance monitoring and other occupational health services at on-site clinics during paid worktime at many of our large sites such as in Wesseling, Germany; Berre, France; Ferrara, Italy; and Channelview, Texas. Information on occupational health services is provided globally throughout the new hire on-boarding process and offered in various languages dependent on the site location.

GRI 403-4

Worker participation, consultation and communication on occupational health and safety

Health and safety committees at the facility help drive our GoalZERO culture. They provide a representative forum to communicate, encourage and increase employee involvement in identifying and resolving health, safety and environmental concerns. Committees typically meet on a monthly or bimonthly basis and rotate members for continuous improvement and continuity. Members participate in identification of hazards, assessment of risks, investigation of incidents, implementation of corrective measures and audits.

GRI 403-5

Worker training on occupational health and safety

LyondellBasell provides required health and safety training to workers. Training differs between locations according to the role and tasks of each worker. Best practices and targeted discussions of opportunities to demonstrate safe behaviors are typically shared before each meeting to reinforce the value of safety. All employees have access to SOURCES, a centralized Health & Safety resource on our intranet site. SOURCES offers training presentations, best practices, reference materials and a variety of other tools to educate employees about health and safety at work.

GRI 403-6

Promotion of worker health

Employees receive a wide variety of health benefits based on geographic location, applicable local and national law, and labor or works council agreements. Full-time employees at our major offices and manufacturing sites receive competitive benefits which may include, depending on location, basic health and welfare benefits, including medical coverage; life and accident insurance; business travel accident insurance; and disability protection. To further promote total worker well-being, many of our large U.S. sites provide additional non-occupational care to address worker mental health and chronic disease management. Counseling for personal and work-related concerns is available in many regions.

GRI 403-8

Workers covered by an occupational health and safety management system

All employees and contractors whose work and/or workplace is controlled by LyondellBasell are required to comply with all health and safety management system requirements.

GRI 403-9

Work-related injuries

See [page 44](#) of this report.

Training and Education

GRI 3-3

Management of material topics

Employee growth and development are key elements supporting our vision of superior performance. Employees play an active role in their own development. They are encouraged and empowered to create plans for their development and to discuss those plans and goals with their managers on a regular basis. Having these conversations helps managers ensure that employees have opportunities to receive developmental experiences on the job, including learning from others. We also offer more formal and structured development opportunities for our employees via in-class and online learning. Training needs are determined as part of individual employee assignment and development, on an equal employment opportunity basis.

GRI 404-1

Average hours of employee training

Average Training Hours Per Person:	42
Executive	31
Manager	41
Professional and technical	21
Administrative	36

Average hours of training per person includes all employees, not just the categories reported.

The average training hours per person increased from 39 average hours in 2021 to 42 hours in 2022. The increase was in large part due to the expansion of leadership training/programs. Virtual and in-person classes saw a 10% increase in 2022 compared with 2021.

GRI 404-2

Programs for upgrading employee skills and transition assistance programs

Upgrading skills

Supporting employee growth and development remains a key focus for the company. In 2022, we launched a new e-learning platform that provides learning opportunities for employees globally. Approximately 31% of our workforce is enrolled in the program and has completed more than 10,000 training hours aimed at increasing business, technology and personal development skills. We also launched LyondellBasell University, a platform which provides learning and development resources to help employees advance their capabilities and unlock their potential.

In addition, our Engineer U program also provides in-person and virtual classes to our global engineering workforce, and our Young Engineer Program in Europe provides our engineers with rotational and developmental opportunities. In 2022, four new engineers were onboarded into the Young Engineer Program, and 19 young engineers attended an internal learning forum.

Our targeted leadership development programs are designed to equip our current and future leaders with the necessary tools and skills to lead in any business environment. Through a blend of rigorous business and technical projects as well as a focus on personal mastery and career development, participants of these programs:

- Gain insight on leadership strengths, gaps and development needs through assessment and coaching
- Build individual career and development plans
- Participate in comprehensive discussions with senior executives
- Obtain insights into strategic global leadership skills from internal and external experts
- Work across the enterprise to create and implement solutions for identified business initiatives

In 2022, leadership training was provided to leaders at various levels in the company, including 262 first-time leaders who participated in a program to help them transition effectively into leading others, 116 middle managers who participated in an interactive 3-month classroom program to advance their coaching skills, and 96 senior leaders who completed an intense 5-day university program to equip them to lead our business initiatives.

To prepare our leaders for advancement to larger roles, we tripled participation in our executive mentoring and peer learning programs. In addition, we expanded quarterly talent reviews to lower management levels to drive more internal promotions and help leaders improve how they attract, develop and retain employees.

As a result of this focused approach, about 83% of openings in senior leader roles were filled by internal talent, underscoring our commitment to advancing talent from within the company.

Education benefits

To encourage employee self-development, we offer a Global Educational Assistance Program that provides financial aid to those pursuing an associate, bachelor's or graduate degree. Any regular full-time, active employee with a minimum of one year of service and a current performance rating of "successful performance" or greater is eligible for educational assistance unless otherwise stipulated under a labor or works council agreement.

The Global Accelerated and Executive Graduate Degree Program offers additional financial assistance and modification in work schedule for those employees participating in an executive master's degree program, which typically requires an intense period of study over a shortened duration of time and carries substantially higher costs.

Transition assistance program

Employees whose positions are eliminated from the company receive transition assistance provided by a leading outplacement services company. The program includes career assessments, resume writing, LinkedIn profile updates, skills training, personal coaching and access to online research tools, job search platforms and networking events.

GRI 404-3

Percentage of employees receiving regular performance reviews

We utilize a continuous performance management system whereby managers discuss individual performance throughout the year. This process ensures managers are equipped to provide continual, on-going and effective feedback to create a culture of ownership for our work and success, support a culture of recognition and accountability, and promote personal and professional growth for each employee.

While all employees receive continuous feedback on their performance, the number of employees participating in our corporate performance appraisal program is determined by local country employment laws and collective bargaining agreements. Performance reviews of non-exempt and hourly employees are voluntary by site.

A total of 11,100 performance reviews were conducted in 2022, which represents 58% of employees participating in the program.

Diversity and Equal Opportunity

GRI 3-3

Management of material topics

GRI 405-1

Diversity of governance bodies and employees

See pages [12](#) and [62](#) of this report.

GRI 405-2

Ratio of basic salary and remuneration of women to men

See [page 53](#) of this report.

Human Rights

GRI 408-1

Operations and suppliers at significant risk for incidents of child labor

We prohibit child labor. For purposes of employment, we define “child” as anyone under sixteen years of age, unless national or local law stipulates a higher mandatory school leaving or minimum working age, in which case the higher age applies. We do not hire people under the applicable mandatory minimum.

We conducted an assessment of manufacturing, pipeline and storage facilities owned or operated by LyondellBasell and our third-party shipping and logistics providers to ensure compliance with our Human Rights Policy and identify human rights risks, including child labor and forced or compulsory labor. The assessment was conducted by a third party and is consistent with the UN Guiding Principles on Human Rights.

We assess our key suppliers using sustainability performance criteria, including human rights. we utilized EcoVadis assessments and joined Together for Sustainability (TfS). For more information about our Sustainable Procurement program, see [pages 55-56](#) of this report.

GRI 409-1

Operations and suppliers at significant risk for incidents of forced or compulsory labor

We forbid the use of forced, bonded (including debt bondage), indentured, or involuntary labor, exploitative prison labor, slavery, or trafficking in our operations. We prohibit harsh or inhumane treatment of all workers, including actual or threatened corporal punishment. We will not retain passports or other original employee documents unless required by law and will not restrict employee access to such documents. Neither we nor the recruitment partners we work with charge any fee for employment, and we do not ask for any refundable security deposit to be paid for employment purposes.

See GRI 408-1 for information regarding an assessment of manufacturing, pipeline and storage facilities owned or operated by LyondellBasell and our third-party shipping and logistics providers.

We assess our key suppliers using sustainability performance criteria, including human rights. we utilized EcoVadis assessments and joined Together for Sustainability (TfS). For more information about our Sustainable Procurement program, see [pages 55-56](#) of this report.

We publish an annual Human Trafficking and Anti-Slavery Statement in accordance with the U.K. Modern Slavery Act of 2015 and the California Transparency in Supply Chains Act of 2010 in the U.S.

GRI 410-1

Security personnel trained in human rights

We promote the security of our workers and premises and take affirmative steps to maintain a workplace that is free from violence, intimidation, or other disruptive conditions. We strive for a security response that is respectful of human rights, consistent with international standards and proportional to the threat identified.

GRI 412-1

Operations that have been subject to human rights reviews or impact assessments

See GRI 408-1 and 409-1 on this page.

GRI 412-2

Employee training on human rights policies and procedures

See [pages 65-66](#) of this report.

Local communities

GRI 413-1

Operations with local community engagement, impact assessment and development programs

See [pages 57-60](#) of this report.

GRI 414-1

New suppliers that were screened using social criteria

See Sustainable Procurement, [pages 55-56](#) of this report.

Public Policy

GRI 3-3

Management of material topics

As permitted under U.S. law, the company oversees and administers a political action committee that is registered with the U.S. Federal Election Commission. The LYB PAC allows eligible U.S. employees to voluntarily support candidates for elected office who share LyondellBasell's perspectives and approaches to public policy issues. The contributions made by the PAC are not funded by corporate funds but are fully funded by voluntary employee contributions. In March 2022, our Political Contributions Policy was amended to prohibit the use of company resources (including monetary and in-kind services) to make direct political contributions to political parties or candidates, even when permitted by law. The revised policy also clarifies that all political contributions are made solely through the LYB PAC.

For information on our public policy and advocacy activities, see our website at www.lyondellbasell.com under Public Policy & Political Engagement. We disclose details of our U.S. political contributions in our annual U.S. Political Activity Report which also can be found on our website.

GRI 415-1

Political contributions

Monetary value of financial contributions	2018	2019	2020	2021	2022
	\$157,500	\$140,000	\$129,500	\$85,500	\$128,500

Data includes PAC contributions for all years. Contributions made in 2018 also includes corporate political contributions. Dues paid to industry associations are not included. No in-kind political contributions were made. U.S. federal contributions are disclosed in our filings with the Federal Election Commission (FEC), as required by law.

Customer Health & Safety

GRI 3-3

Management of material topics

GRI 416-1

Assessment of health and safety impacts of product and service categories

GRI 416-2

Incidents of non-compliance concerning the health and safety impacts of products and services

See Product Safety and Stewardship, [page 48](#) of this report.

Customer Privacy

Data Privacy

The company maintains a privacy program that is based on a Data Privacy and Personal Protection Policy and corresponding standards and practices that facilitate adherence to Personal Data protection laws globally.

As part of its global privacy program, the company's Data Privacy counsel and the Data Privacy Committee (the Committee), guides, monitors and stays accountable for data privacy compliance efforts globally. The Committee is established to assist with centralized and cross-functional governance of data privacy standards and provides a framework that supports administration of the Data Privacy program.

All employees receive annual training on data privacy policies and procedures, as well as their rights and obligations and we regularly conduct additional off cycle training sessions.

We also maintain a privacy management tool that helps us comply with global privacy regulations and provides LyondellBasell with a centralized platform to track data and automate privacy processes and assessments. We also utilize this tool to maintain our Record of Processing Activities (ROPA) or data inventory which provides a view of personal data that is being processed by the company.

We closely monitor changing legal requirements and engage external resources and experts as necessary to help us appropriately adapt and improve our global program to data protection laws and regulations in the jurisdictions where we operate.

For more information regarding how the company processes personal data, see the LyondellBasell Privacy Statement on our website at www.lyondellbasell.com under the Data Protection & Privacy Statement.

Cybersecurity

We recognize sophisticated global cybersecurity threats and targeted computer crimes pose a continuously evolving risk to the confidentiality, availability, and integrity of our data, operations and infrastructure. LyondellBasell has implemented comprehensive practices to minimize these risks. Our cybersecurity program is certified to the ISO 27001 standard for information security management, which covers key areas of management, technical and physical controls, legal, compliance and business continuity management.

The Vice President of Cybersecurity leads our cybersecurity program and reports to the Executive Vice President and Chief Innovation Officer, who serves on the Executive Committee and reports to the CEO. The Audit Committee of the Board oversees the company's information technology and cybersecurity risks. The Committee conducts a deep dive into cybersecurity topics and reviews our programs and practices with management at least semiannually, and receives management's report on relevant activities and metrics at each quarterly Committee meeting.

Our cybersecurity program includes:

1. Annual cybersecurity education for all company computer users on relevant policies and standards, best practices at work and at home
2. Communication processes including how to identify, respond, and report threats or potential vulnerabilities
3. Protective software installed and configured on company systems and mobile devices, updated and patched on a regular basis, to provide the highest level of protection against malicious threats

4. An established program based on the ATT&CK framework for dealing with ransomware and other cybersecurity incidents
5. Regular technical risk assessments of our network, applications and manufacturing facilities, using a combination of trusted suppliers and a dedicated, objective team
6. Penetration, discovery and vulnerability assessments conducted daily
7. Mobile threat protection mechanisms and policies
8. Business continuity plans that are well documented and tested regularly; disaster recovery plans that are also well documented and tested at least annually
9. Coverage for non-damage business interruption or liability for data breaches as a part of the company's combined insurance programs

SASB#	Description	
GREENHOUSE GAS EMISSIONS		
110a.1	Gross global Scope 1 emissions, percentage covered under a regulatory program	See pages 30-31 and 35 of this report.
110a.2	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets,	See pages 30-31 of this report.
AIR QUALITY		
120a.1	Air emissions of the following pollutants: (1) NOx (excluding N2O), (2) SOx, (3) volatile organic compounds (VOCs), and (4) hazardous air pollutants (HAPs)	See page 37 of this report.
ENERGY MANAGEMENT		
130a.1	(1) Total energy consumed, (2) percentage grid electricity, (3) percentage renewable, (4) total self-generated energy	1) 393 million GJ 2) 8% 3) 0.03% 4) 257 million GJ

SASB#	Description	
WATER MANAGEMENT		
140a.1	(1) Total water withdrawn, (2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	See pages 38-39 of this report.
140a.2	Number of incidents of non-compliance associated with water quality permits, standards and regulations	7
140a.3	Description of water management risks and discussion of strategies and practices to mitigate those risks	See pages 38-39 of this report.
HAZARDOUS WASTE MANAGEMENT		
150a.1	Amount of hazardous waste (1) generated, (2) percentage recycled	See page 40 of this report.
COMMUNITY RELATIONS		
210a.1	Discussion of engagement processes to manage risks and opportunities associated with community interests	See pages 57-60 of this report.
WORKFORCE HEALTH & SAFETY		
320a.1	(1) Total recordable incident rate (TRIR) and (2) fatality rate for (a) direct employees and (b) contract employees	See page 44 of this report.
320a.2	Description of efforts to assess, monitor and reduce exposure of employees and contract workers to long-term (chronic) health risks	See GRI 403-3, pages 86-87 of this report.
SAFETY & ENVIRONMENTAL STEWARDSHIP OF CHEMICALS		
410b.1	(1) Percentage of products that contain Globally Harmonized System of Classification and Labeling of Chemicals (GHS) Category 1 and 2 Health and Environmental Hazardous Substances, (2) percentage of such products that have undergone a hazard assessment	1) Less than 1% 2) 100%
410b.2	Discussion of strategy to (1) manage chemicals of concern and (2) develop alternatives with reduced human and/or environmental impact	See pages 48-49 of this report.

SASB#	Description	
GENETICALLY MODIFIED ORGANISMS		
410c.1	Percentage of products by revenue that contain genetically modified organisms (GMOs)	LyondellBasell produces no products containing genetically modified organisms.
MANAGEMENT OF THE LEGAL & REGULATORY ENVIRONMENT		
530a.1	Discussion of corporate positions related to government regulations and/or policy proposals that address environmental and social factors affecting the industry	Our Principles for Public Policy can be found on our website at www.lyondellbasell.com
OPERATIONAL SAFETY, EMERGENCY PREPAREDNESS & RESPONSE		
540a.1	(1) Process Safety Incidents Count (PSIC), (2) Process Safety Total Incident Rate (PSTIR), and (3) Process Safety Incident Severity Rate (PSISR)	See page 45 of this report.
ACTIVITY METRIC		
000.A	Production by reportable segment	See GRI 2-6, page 72 of this report.

REPORT OF INDEPENDENT ACCOUNTANTS



Report of Independent Accountants

To the Management of LyondellBasell Industries N.V.

We have reviewed the accompanying LyondellBasell Industries N.V. (LyondellBasell) management assertion that the greenhouse gas (GHG) emissions and total energy consumption metrics (metrics) for the year ended December 31, 2022 in management's assertion are presented in accordance with the assessment criteria set forth in management's assertion. LyondellBasell's management is responsible for its assertion and for the selection of the criteria, which management believes provide an objective basis for measuring and reporting on the metrics. Our responsibility is to express a conclusion on management's assertion based on our review.

Our review was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants (AICPA) in AT-C section 105, *Concepts Common to All Attestation Engagements*, and AT-C section 210, *Review Engagements*. Those standards require that we plan and perform the review to obtain limited assurance about whether any material modifications should be made to management's assertion in order for it to be fairly stated. The procedures performed in a review vary in nature and timing from, and are substantially less in extent than, an examination, the objective of which is to obtain reasonable assurance about whether management's assertion is fairly stated, in all material respects, in order to express an opinion. Accordingly, we do not express such an opinion. Because of the limited nature of the engagement, the level of assurance obtained in a review is substantially lower than the assurance that would have been obtained had an examination been performed. We believe that the review evidence obtained is sufficient and appropriate to provide a reasonable basis for our conclusion.

We are required to be independent and to meet our other ethical responsibilities in accordance with relevant ethical requirements related to the engagement.

The firm applies the Statements on Quality Control Standards established by the AICPA and, accordingly, maintains a comprehensive system of quality control.

The procedures we performed were based on our professional judgment. In performing our review, we performed inquiries, performed tests of mathematical accuracy of computations on a sample basis, read relevant policies to understand terms related to relevant information about the metrics, reviewed supporting documentation in regard to the completeness and accuracy of the data in the metrics on a sample basis, and performed analytical procedures.

GHG emissions quantification is subject to significant inherent measurement uncertainty because of such things as GHG emissions factors that are used in mathematical models to calculate GHG emissions, and the inability of these models, due to incomplete scientific knowledge and other factors, to accurately measure under all circumstances the relationship between various inputs and the resultant GHG emissions. Environmental and energy use data used in GHG emissions calculations are subject to inherent limitations, given the nature and the methods used for measuring such data. The selection by management of different but acceptable measurement techniques could have resulted in materially different amounts or metrics being reported.

The preparation of the total energy consumption metric requires management to establish the criteria, make determinations as to the relevancy of information to be included, and make assumptions that affect reported information. The selection by management of different but acceptable measurement techniques could have resulted in a materially different amount or metric being reported.

Based on our review, we are not aware of any material modifications that should be made to LyondellBasell's management assertion in order for it to be fairly stated.

Houston, Texas
April 20, 2023

LYONDELLBASELL MANAGEMENT ASSERTION

LyondellBasell Industries N.V. Management Assertion For the year ended December 31, 2022

Overview

The management of LyondellBasell Industries N.V. (LyondellBasell) is responsible for the completeness, accuracy, and validity of the greenhouse gas (GHG) emissions and total energy consumption metrics (metrics) presented in the table below for the year ended December 31, 2022. Management asserts that the metrics are presented in accordance with the assessment criteria set forth below. Management is responsible for the selection of the criteria, which management believes provides an objective basis for measuring and reporting on the metrics.

Organizational Boundary

LyondellBasell accounts and reports the metrics under the operational control approach, as defined in the Protocol (defined below), which includes operations over which we, or one of our subsidiaries, have operational control. Data for sites acquired in 2022 is included for the full year.

LyondellBasell's reported metrics includes our manufacturing sites, pipelines, large regional offices (collectively referred to as "sites") and excludes small regional offices which are defined as those with energy consumption lower than a 3,500 gigajoules threshold.

Table: Metrics

Metric	Unit of Measure	Definition	Quantity reported (in millions)
Scope 1 emissions	Metric tons CO ₂ e	Includes direct GHG emissions from (1) the generation of electricity, heat, or steam resulting from the combustion of fossil fuels in stationary sources, (2) process related GHG emissions from venting and flaring activities and other process-related GHG emissions, and (3) fugitive emissions (including methane). ^{1,2,3,4}	14.7
Scope 2 emissions (market-based)	Metric tons CO ₂ e	Includes indirect GHG emissions from the generation of purchased electricity and steam (market-based). ^{1,2,3,5}	7.4
Scope 2 emissions (location-based)	Metric tons CO ₂ e	Includes indirect GHG emissions from the generation of purchased electricity and steam (location-based). ^{1,2,3,5}	7.0
Total energy consumption	Gigajoules	Direct and indirect energy consumption related to Scope 1 and 2 activities. ⁶	382

Metric disclosures

1. LyondellBasell considers the principles and guidance of *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, Revised Edition*, and *GHG Protocol Scope 2 Guidance: An amendment to the GHG Protocol Corporate Standard* (collectively referred to as the "Protocol") developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) to collect, calculate and report GHG emissions. The Protocol is the basis for LyondellBasell's definitions, calculation methodologies and calculation results included in this management assertion, unless explicitly stated otherwise.

2. GHG emissions quantification is subject to significant inherent measurement uncertainty because of such things as GHG emissions factors that are used in mathematical models to calculate GHG emissions, and the inability of these models, due to incomplete scientific knowledge and other factors, to accurately measure

under all circumstances the relationship between various inputs and the resultant GHG emissions. Environmental and energy consumption data used in GHG emissions calculations are subject to inherent limitations, given the nature and the methods used for measuring such data. The selection by management of different but acceptable measurement techniques could have resulted in materially different amounts or metrics being reported.

3. Scope 1 and 2 GHG emissions are inclusive of the main gases considered under the Protocol and include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and industrial gases such as hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs). The other three gases considered – perfluorocarbons (PFCs), nitrogen trifluoride (NF₃), and sulfur hexafluoride (SF₆) – are not emitted at LyondellBasell's sites. Emissions data by individual gas is not disclosed as a majority relates to CO₂. The CO₂ equivalent (CO₂e) emissions utilize Global Warming Potentials (GWPs) defined by the Intergovernmental Panel on Climate Change's (IPCC) Fifth Assessment Report (AR5 – 100 year). CO₂ equivalent emissions are calculated by multiplying actual or estimated energy and fuel usage or refrigerant gas loss by the relevant emission factor and GWP. All emission factors are updated annually where applicable.

4. Related to Scope 1 direct GHG emissions:

- Emissions resulting from the combustion of fossil fuels (natural gas, refinery gas, light fuel oil/diesel, heavy fuel oil/diesel, hydrogen, coal, lignite, butene, pitch, and the site-generated fuels of fuel gas/tail gas (a blend of process gases used as fuel onsite), fuel A xTBE (manufacturing of tertiary butyl ethers), fuel A POTBA (propylene oxide/tertiary butyl alcohol), and fuel B) in stationary equipment and machinery used at LyondellBasell sites.
 - Fuel usage data is collected from monthly utility invoices, readings from on-site third-party managed meters, or readings from on-site LyondellBasell managed meters.
 - Emission factors:
 - Natural gas, refinery gas, light fuel oil/diesel, heavy fuel oil/diesel, hydrogen, coal, lignite, butene, and pitch: American Petroleum Institute's Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry, November 2021, Tables 4-3 (CO₂), 4-6 and 4-8 (CH₄ and N₂O).
 - Site-generated fuels:
 - Fuel gas/tail gas - Calculated value derived from a weighted-average energy content and emission factor for the fuel gas.
 - Fuel A xTBE - Calculated value from site heating value and emissions for fuel A (gaseous waste) stream specific to xTBE technology.
 - Fuel A POTBA - Calculated value from site heating value and emissions for fuel A (gaseous waste) stream specific to the POTBA technology.
 - Fuel B - Calculated value from site heating value and emissions for fuel B (liquid waste) stream.
- Emissions resulting from venting, flaring as well as other process-related activities which include, but are not limited to, emissions from wastewater treatment (WWT) activities and peroxide decomposition byproducts, at LyondellBasell's sites.
 - Venting and flaring as well as other process-related activity is reported annually on a site-by-site basis via direct measurement. The resulting emissions are converted to CO₂e on a site-by-site basis using GWPs from the IPCC Fifth Assessment Report.

LYONDELLBASELL MANAGEMENT ASSERTION

- Emissions resulting from fugitive emissions at LyondellBasell's sites:
 - Fugitive emissions related to volatile organic compounds (VOCs), including methane, are measured per environmental requirements in CFR Title 40 Chapter I Subchapter C and converted to CO₂e using GWPs from the IPCC Fifth Assessment Report.
 - HCFCs and HFCs are related to replenishment of refrigerants. Refrigerant gases (including refrigerants other than HCFCs and HFCs) are calculated on a loss-replenishment basis using site-specific refrigerant management records. The GWP of the individual refrigerant is used to convert the losses into CO₂e.
 - Direct emissions associated with the sale of energy generated from our own operations to another company are not deducted/netted from Scope 1, in accordance with the recommendations of the Protocol.
 - Excluded Scope 1 GHG emissions: LyondellBasell excluded the following sources of GHG emissions:
 - Combustion related to emissions from LyondellBasell owned or leased motor vehicles.
 - Combustion related to emissions from non-stationary leased and rented equipment such as temporary air compressors and pumps, welding machines, and mobile light plants used onsite.
5. Related to Scope 2 indirect GHG emissions:
- Emissions resulting from the purchase of energy in the form of electricity or steam used at LyondellBasell sites. Consumption is collected from monthly utility invoices for electricity and steam usage.
 - LyondellBasell may purchase electricity or steam that is used by on-site third party users due to common transport header. In this event, the third party's use is deducted from the aggregate invoice. The quantity transferred to the third party is documented and invoiced to them.
 - Emission factors for steam:
 - Provided by the third party steam supplier.
 - Emission factors for electricity (location-based):
 - International Energy Agency 2021 Emission Factors Database, 2020 Provisional Emission Factors (CO₂) and 2019 Emission Factors (CH₄ and N₂O).
 - Emission factors for electricity (market-based):
 - LyondellBasell used Guarantees of Origin (GOs) and Renewable Energy Credits (RECs) during 2022 to contractually procure renewable energy in relation to our manufacturing sites in Brazil and Sweden. Any remaining electricity not associated with a GO or REC was converted to emissions using the emission factor hierarchy described below.
 - After application of GOs and RECs, the emission factors were applied based on the Protocol hierarchy and availability of data, including the factors below listed from highest to lowest precision:
 1. Utility-specific market-based emission factors were provided by the utility suppliers.
 2. Other grid-average emission factors – same as location-based.
 - Excluded Scope 2 GHG Emissions: LyondellBasell excluded the following sources of GHG emissions:
 - District heating and cooling.
 - Cooling water and chilled water purchased from third party suppliers.
 - Compressed air or nitrogen purchased from third party suppliers.
6. Total energy consumption:
- LyondellBasell considers the principles and guidance of the Sustainability Accounting Standards Board (SASB) Chemicals Industry Standard Accounting Metric RT-CH-130a.1 to guide the criteria to assess, calculate, and report total energy consumption.
 - Total energy consumption (in gigajoules) is the sum of direct energy from purchased fuels and other fuels produced on-site (natural gas, refinery gas, light fuel oil/diesel, heavy fuel oil/diesel, hydrogen, coal, lignite, butene, pitch, and the site-generated fuels of fuel gas/tail gas, fuel A xTBE, fuel A POTBA, and fuel B) and indirect energy from purchased grid electricity and steam.
 - Energy is calculated by conversion to gigajoules of direct and indirect energy usage from Scope 1 and 2 consumption data as discussed in the Scope 1 and Scope 2 GHG Emissions footnotes above.
 - The preparation of the total energy consumption metric requires management to establish the criteria, make determinations as to the relevancy of information to be included, and make assumptions that affect reported information. The selection by management of different but acceptable measurement techniques could have resulted in a materially different amount or metric being reported.

RECONCILIATIONS FOR NON-GAAP MEASURES

This report makes reference to certain “non-GAAP” financial measures as defined in Regulation G of the U.S. Securities Exchange Act of 1934, as amended.

We report our financial results in accordance with U.S. generally accepted accounting principles (“U.S. GAAP”), but believe that certain non-GAAP financial measures, such as EBITDA, and EBITDA, net income and diluted earnings per share exclusive of identified items, provide useful supplemental information to investors regarding the underlying business trends and performance of our ongoing operations and are useful for period-over-period comparisons of such operations. Non-GAAP financial measures should be considered as a supplement to, and not as a substitute for, or superior to, the financial measures prepared in accordance with GAAP. We calculate EBITDA as income from continuing operations plus interest expense, net, provision for (benefit from) income taxes, and depreciation and amortization. EBITDA should not be considered an alternative to profit or operating profit for any period as an indicator of our performance, or as an alternative to operating cash flows as a measure of our liquidity.

We also present EBITDA, net income and diluted EPS exclusive of identified items. Identified items include adjustments for “lower of cost or market” (“LCM”), impairments and refinery exit costs. Our inventories are stated at the lower of cost or market. Cost is determined using the last-in, first-out (“LIFO”) inventory valuation methodology, which means that the most recently incurred costs are charged to cost of sales and inventories are valued at the earliest acquisition costs. Fluctuation in the prices of crude oil, natural gas and correlated products from period to period may result in the recognition of charges to adjust the value of inventory to the lower of cost or market in periods of falling prices and the reversal of those charges in subsequent interim periods, within the same fiscal year as the charge, as market prices recover. Property, plant and equipment are recorded at historical costs. If it is determined that an asset or asset group’s carrying value exceeds fair value, an impairment charge is recognized to write the asset down to its estimated fair value. In April 2022 we announced our decision to cease operation of our Houston Refinery no later than the end of 2023. In connection with exiting the refinery business, we began to incur costs primarily consisting of accelerated lease amortization costs, personnel related costs, accretion of asset retirement obligations and depreciation of asset retirement costs.

Reconciliation of Net Income to Net Income Excluding Identified Items and to EBITDA Including and Excluding Identified Items

Millions of dollars	Year Ended December 31, 2022	
Net income	\$	3,889
add: Identified items		
Impairments, after-tax ^(a)		69
Refinery exit costs, after-tax ^(b)		144
Net income excluding identified items	\$	4,102
Net income	\$	3,889
Loss from discontinued operations, net of tax		5
Income from continuing operations		3,894
Provision for income taxes		882
Depreciation and amortization ^(c)		1,267
Interest expense, net		258
add: Identified items		
Impairments ^(a)		69
Refinery exit costs ^(d)		157
EBITDA excluding identified items		6,527
less: Identified items		
Impairments ^(a)		(69)
Refinery exit costs ^(d)		(157)
EBITDA	\$	6,301

(a) Impairment charges relate to the sale of our Australian polypropylene business.

(b) Refinery exit costs, after-tax, include accelerated lease amortization costs, personnel related costs, accretion of asset retirement obligations and depreciation of asset retirement costs of \$70 million, \$49 million, \$2 million and \$23 million, respectively.

(c) Depreciation and amortization includes depreciation of assets retirement cost of \$30 million expensed in connection with exiting the refinery business.

(d) Refinery exit costs include accelerated lease amortization costs, personnel related costs and accretion of asset retirement obligations of \$91 million, \$64 million, and \$2 million, respectively.

Reconciliation of Diluted EPS to Diluted EPS Excluding Identified Items

	Year Ended December 31, 2022	
Diluted earnings per share	\$	11.81
Add:		
Impairments		0.21
Refinery exit costs		0.44
Diluted earnings per share excluding identified items	\$	12.46

Reconciliation of Net Income to EBITDA for the Value Enhancement Program

Millions of Dollars	2025 ^(a) Recurring Annual EBITDA	
Net income	\$	575
Provision for income taxes		140
Depreciation and amortization		35
Interest expense, net		—
EBITDA	\$	750

(a) In 2022, we launched a value enhancement program targeting \$750 million in recurring annual EBITDA by the end of 2025.

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