Resourceful, Reliable, Responsible.

Our journey toward a sustainable future.

Corporate Sustainability Report 2022

RAIN CARBON INC.

Contents

1 Introduction

1.1 Message from our President

Dear Reader,

At Rain Carbon, we understand that sustainability is quickly becoming a license for companies to do business, with growing demands for reduced greenhouse gases, decreased energy consumption, "doing what's right" when it comes to corporate social responsibility and much more. Our company is focused on meeting rapidly emerging customer needs and accelerating the transformation of our industry in a world committed to cleaner, greener, lighter and faster products and applications. In short, we know that nothing will have a greater impact on the success of our business than our sustainability efforts and ability to meet the related needs of our customers.

Guided by our corporate vision to be the world's most trusted and resourceful provider of diversified carbon products and advanced materials, our businesses are committed to a sustainable environment and maintaining the ecological, social and economic well-being of future generations.

In the course of our daily activities at Rain Carbon:

- We strive to follow the triple bottom-line approach of "People, Planet and Profit" to equally consider the economic, environmental, and social impact of our activities
- We aim to maximize the positive and minimize the negative environmental and social impacts arising from our operations
- We strive to operate responsibly in alignment with universal principles of human rights, labor, environmental and anti-corruption standards

In 2020, we laid the foundation for a more systematic sustainability approach by creating our first organizational structure to actively promote sustainability. Since then, we have worked to advance our sustainability activities in line with the requirements of the Global Reporting Initiative reporting standards, and we are working to align our business activities with the 17 sustainable development goals in the United Nations' 2030 Agenda for Sustainable Development.

Accordingly, our Carbon and Advanced Materials segments conducted the company's first materiality assessment as a starting point for the development of our future sustainability strategy. To help develop and drive our sustainability strategy, we have spent the past two years identifying the most important issues for our business as well as setting mid- and long-term targets related to each issue, including:

- Climate Action (enhanced energy efficiency and reduced greenhouse gas emissions)
- Monitoring and Reducing Non-Greenhouse Gas Emissions
- Standardized Waste and Water Management
- Safe Operations and Employee Health
- Organizational Resilience
- Innovation for Sustainable Development
- Enhanced Circularity

GRI 2–22

Today, I am pleased to present Rain Carbon's first publicly available sustainability report, which highlights the important role we play in the global evolution toward a more sustainable world and circular economy. This report also describes the challenges that we face and the need to continuously improve the way we operate.

In our daily business operations, the sustainability efforts in our Carbon and Advanced Materials segments begin with the "upcycling" of green petroleum coke and coal tar. By extracting additional value from these industrial by-products, we are achieving higher levels of carbon productivity compared with allowing them to be used in less efficient ways – such as burned as a highly emitting fuel for power generation or disposed of in landfills. In doing so, we are transforming these by-products into critical raw materials for goods that people use every day while helping to meet growing demand for greener products and a cleaner environment.

These products include calcined petroleum coke and coal tar pitch, which are essential ingredients in the anodes required for the production of lightweight and infinitely recyclable aluminum. Elsewhere, our PETRORES® specialty coatings are used in the lithium-ion batteries required for emission-free electric vehicles, and our NOVARES® resins decrease a car's energy consumption by reducing rolling and abrasion resistance in tires. Similarly, our anhydrous carbon pellets, once commercialized for use in anodes for aluminum production, will increase our green petroleum coke utilization rate while also contributing to lower emissions and energy consumption by smelters.

Beyond our products, our new vertical-shaft calciner in India is equipped with a state-of-the-art flue-gas desulfurization system that removes more than 99% of the facility's sulfur dioxide emissions, making it the most environmentally friendly plant of its kind in the world. In addition, the majority of our production facilities around the world are equipped with waste-heat recovery systems that enable us to cogenerate green electricity and steam to power our operations and that of neighboring businesses.

After more than 150 years as an evolving, adapting business, "sustainability" also describes the longevity of our company. With our investments in 21st-century technologies and processes to meet growing demand for greener products, Rain Carbon is well positioned to continue to make meaningful and sustainable contributions for our customers, communities and investors for decades to come.

Gerry Sweeney

Gerard Sweeney
President, Rain Carbon Inc.

1.2 Sustainability Highlights from Calendar Year 2022

Strategy

First set of ambitions and targets defined for each material topic

Data

Second successful external validation of our environmental sustainability data

9

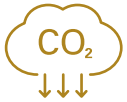
sites with an EcoVadis rating

5

product carbon-footprint studies conducted

>98%

of our raw materials are industrial by-products and converted into value-added enablers for sustainable products



349 kt CO_2-equivalent

Emissions avoided through waste-heat recovery

LiONCOAT®

Launch of LiONCOAT®, a new product series that enables the production of electrode materials for lithium-ion batteries

16%

reduced carbon footprint of calcined petroleum coke when produced by our calciners equipped with waste-heat recovery, compared to a calciner without

15.9

Training hours conducted per employee

2.05

Employee satisfaction score for "Mutual support in your team"*

0.16

Total recordable incident rate

Life-saving rules

Global roll out of four out of nine rules, including directives and guidelines, training, business-segment policies and forms, and implementation equipment

*** Rain Carbon Inc., excluding Visakhapatnam, Scale: 1 very satisfied, 2 satisfied, 3 okay, 4 unsatisfied, 5 very unsatisfied**

1.3 About Rain Carbon

Operating Worldwide

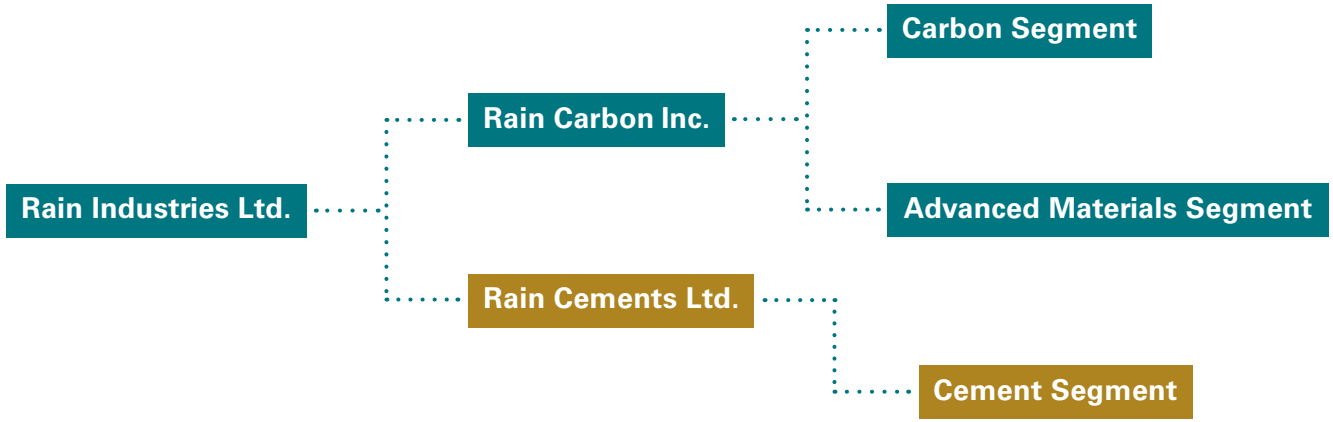
Rain Carbon Inc. (Rain Carbon, RCI) is a leading global manufacturer of raw materials used for carbon products and advanced materials. For over 150 years, we have been converting industrial by-products into valuable raw materials for our customers worldwide. By using our products, our customers can produce a host of materials including aluminum, steel, titanium dioxide, plastics, lithium-ion batteries and tires.

Rain Carbon is headquartered in Stamford, Connecticut (United States), and is a wholly owned subsidiary of Rain Industries Limited (RAIN), a publicly traded company based in Hyderabad, India, which has a second branch in the cement industry. As a holding company, Rain Carbon integrates several entities under a unified global management team, bringing together continuously evolving experience in the field of carbon-based materials.

We have two global business segments: Carbon (calcination and distillation) and Advanced Materials. Our production facilities are located across six countries in three continents. We produce Carbon products at 13 locations (eight calcination and five distillation) and Advanced Materials at five locations. We employ approximately 1,660 people worldwide.

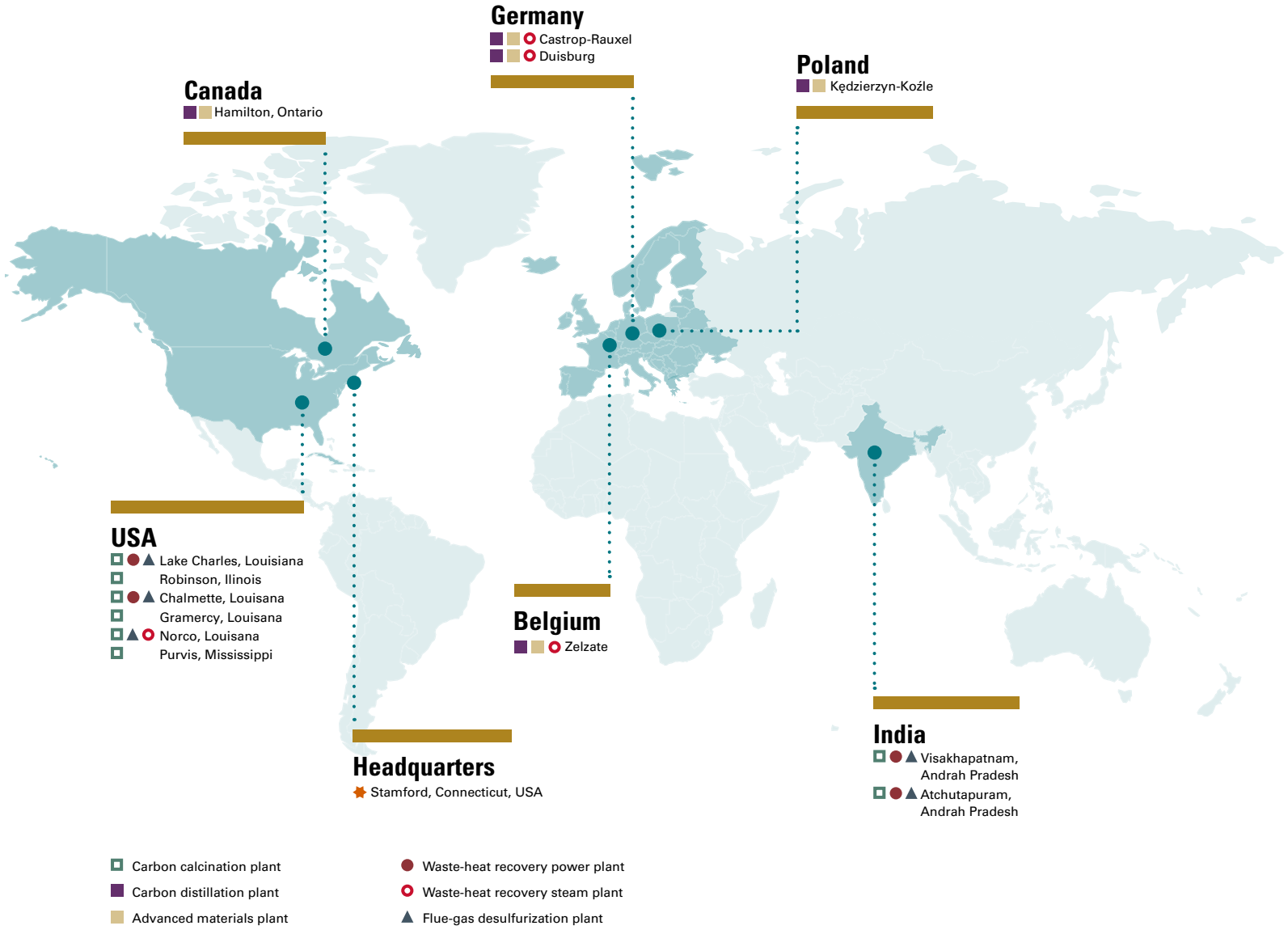
~1,660

people are employed at our company worldwide



GRI 2–1, 2–2, 2–7

Rain Carbon's global presence



Jagan Nellore

CEO

» As you review Rain Carbon's first sustainability report, I hope you feel a greater appreciation for our company's part in meeting the evolving expectations of society. Rain Carbon plays an indispensable role in transforming industrial by-products into essential materials for faster, cleaner and lighter products that enhance the quality of life for people around the world and contribute to a more sustainable and circular economy. «

GRI 2–2, 2–6

Operating with Excellence

Rain Carbon strives to be a resourceful, reliable and responsible business partner for our customers. Both of our business segments are committed to delivering consistent, high-quality products and customized product solutions, relying on decades of experience and innovation.

In our Carbon segment, we transform by-products of upstream industrial processes into valuable carbon-based products. These products are essential raw materials for the industrial production of aluminum, recycled steel, graphite, titanium dioxide and other materials. We are the world's largest producer of coal tar pitch and the second-largest producer of calcined petroleum coke. Both products together form the basis for anodes, without which aluminum production or steel recycling would not be possible on an industrial scale.

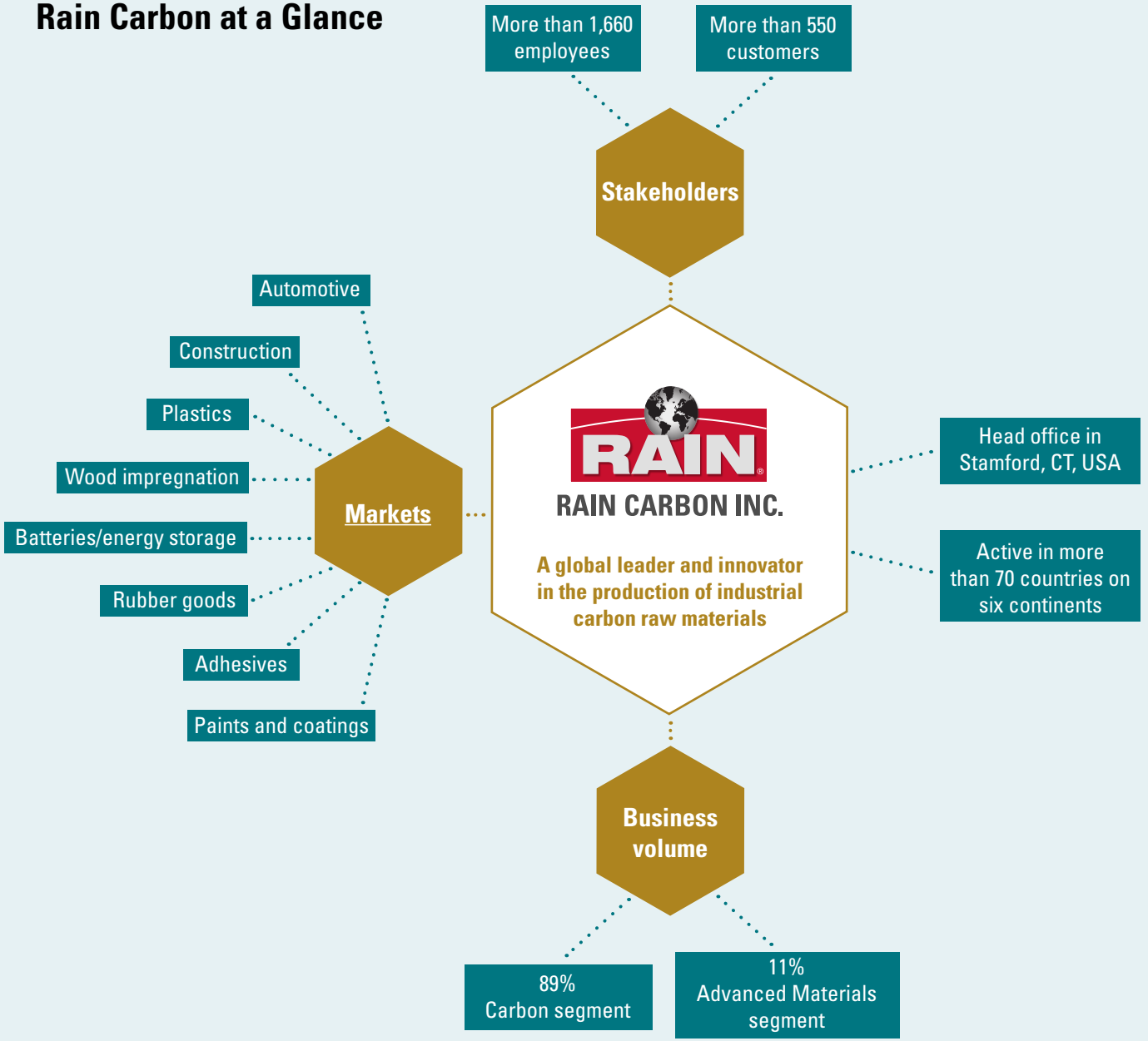
C9 resins produced at our Duisburg facility in Germany are used in adhesives, printing inks, sealants and paints, and tire formulations.

GRI 2–6

Furthermore, we produce industrial steam and electricity as by-products of our processes. This reduces the need for additional steam and power generation from highly emitting fuels and ensures that the clean energy generated by our processes is used instead of being unnecessarily lost.

Within our Advanced Materials segment, we produce materials by further refining fractions from our distillation sites as well as additional carbon-rich feedstocks. Products include resins and derivates for customers in the chemicals, automotive, adhesives, coatings, energy-storage, construction, petroleum and other industries. Our products contribute as packaging materials that extend the shelf-life of food products, as additives to tires to reduce rolling resistance and thus the fuel consumption in cars, and as corrosion protection to extend the maintenance cycle of critical infrastructure.

Rain Carbon at a Glance



GRI 2–6

Lightweight aluminum avoids CO_2 emissions by reducing fuel consumption

A prime example of our positive downstream impact is the use of our CPC and pitch products to produce aluminum, a strong and lightweight material that is used in the production of energy-efficient vehicles. Research suggests that each 100 kg reduction in weight of an average family car results in a reduction of 0.32 liters gasoline used per 100 kilometers[1]. Over the lifetime of the average family car (200,000 km), this translates to a mitigation of ~1.47 tons of CO_2 emissions.

[1] Source: Helms, H.; Kräck, J. (2016). Energy Savings by Light-Weighting – 2016 Update.

Our value chain:

Carbon

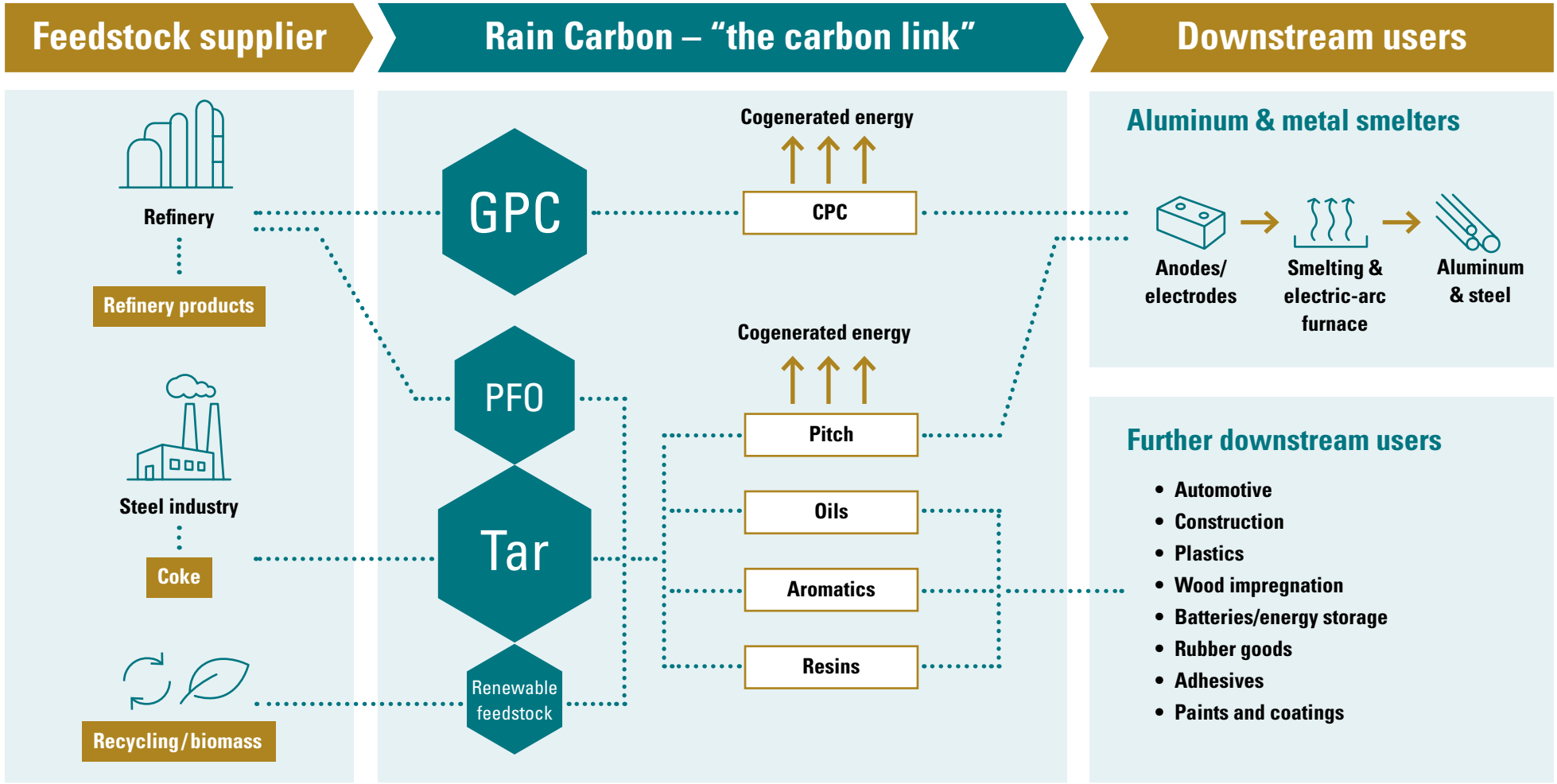
At our calcination plants, we calcine green petroleum coke (GPC), which is a by-product of petroleum refining. After purchasing the material from over 20 different suppliers globally, to several of which we have long-lasting business relationships, we transport it by road, rail, barge and ship to our calcination plants in the United States and India. Through our calcination process, we upcycle green petroleum coke to produce calcined petroleum coke (CPC), creating a value-added product while preventing GPC from being burned as a low-cost, high carbon-dioxide-emitting fuel for heat and electricity production. In addition to being an essential material in anodes used for aluminum production, our CPC is used by customers to produce titanium dioxide and high-strength steel.

We use coal tar and petroleum streams at our distillation plants to produce different carbon distillation products. Beginning with our long-term suppliers, coal tar is transported by a dedicated fleet of trucks, railcars, barges and ships to our strategically located distillation plants in Canada and Europe. Through our distillation process, the coal tar and petroleum streams are refined into pitch products, technical oils and naphthalene, which are necessary for other industrial processes, such as the production of lithium-ion batteries. We consider this a highly resource-efficient business model as both the coal tar and petroleum streams are industrial by-products that would alternatively be used as a carbon-intensive fuel or disposed of as hazardous waste.

Advanced Materials

At our Advanced Material plants in Canada and Europe, we use a wide variety of raw materials, such as fractions of our own coal tar distillation activities, petroleum-derived tars and pitches, oils and carbon-rich feedstocks for several of the segment's production processes. We transport these materials to our plants either in containers, railcars, trucks, barges or tanker ships. The raw materials are further processed in our plants to produce a wide range of value-added advanced materials products such as resins, modifiers, adhesives, petrochemical intermediates and other engineered products. These materials are used by our customers in various industries and downstream processes, such as in the production of lithium-ion batteries, printing inks, coatings and tires.

Rain Carbon's business model



1. Feedstock
Our business model primarily is based on the upcycling of by-products from other industries. For our advanced materials business, we also have started to incorporate certified renewable or recycled raw materials.

2. Production
We upcycle feedstocks with high carbon content like green petroleum coke (GPC), pyrolysis fuel oil (PFO), tar and renewable/recycled feedstock into value-added productive materials. This avoids the incineration of those raw materials for energy generation with the associated emissions. We avoid emissions through the efficient use of the raw materials, as well as utilizing excess energy from our processes to generate electricity or steam without additional emissions.

3. Customers
With our productive-carbon products, we provide essential materials for several industries like aluminum production. We also enhance circularity in downstream markets like steel recycling, and improve the sustainability of end applications like lithium-ion batteries for e-mobility, tires with reduced rolling resistance, and coatings for long-lasting infrastructure.

2
Sustainability Strategy and Governance

2.1 Materiality Process

Matthew Scott-Hansen
Executive Vice President, Corporate

»Sustainability strategy development has become a critical success factor for our company, and it will have an ever-increasing influence on our strategic and operational planning.«

In 2021, Rain Carbon conducted its first materiality assessment to identify our most significant impacts on the environment, economy and people. This assessment was also the starting point and the foundation for the development of our global sustainability strategy.

In the first step, we identified potential material topics through peer benchmarks and according to guidelines from industry groups such as the Verband der Chemischen Industrie (VCI). In a workshop with internal stakeholders, all topics were evaluated for their strategic importance to the business, as well as their relevance for stakeholders. We selected colleagues who were equally able to represent the views of internal and external stakeholders on these topics from both business segments and across different functions. The selected topics were approved by our company's Sustainability Steering Committee (SSC) and presented to the Board of Directors.

In a next step, all topics were evaluated with respect to the potential and actual positive and negative impacts Rain Carbon's business has on the environment, people and economy. We assessed the issues along the entire value chain using the criteria of scale, scope, irremediability and likelihood, according to the recommendations of the GRI (Global Reporting Initiative) Universal Standards 2021. Through this assessment, we identified seven topics that are material for our company due to their impact on sustainable development. These topics were also reviewed and approved by the SSC.

GRI 2–14, 3–1

Our seven material topics:

Including both the effects of our business activities on sustainable development and the strategic importance of sustainability topics on our business helps us to reduce negative and strengthen positive impacts from our business. It also heightens our awareness of the risks arising from sustainability issues on our business success.

In 2022, some material topics were rephrased to sharpen their scope and direction. The rephrased material topics better reflect the current direction of Rain Carbon's strategy development. Therefore, we complemented the existing topic "Waste" with "Water". The new topic "Waste & Water" reflects the rising importance of the protection of global water resources. The topic "Diversity & Equal Rights" was broadened to "Organizational Resilience" to better represent our organizational context. The former topic name "Innovation & Sustainable Product Portfolio" was shortened to "Innovation" to include various aspects of innovation, like product and process innovation.

GRI 3–1, 3–2

2.2 Sustainability Ambitions

We are currently in the process of developing a global sustainability strategy. In early 2021, we initiated a strategy process, which began with a materiality assessment (see 2.1 Materiality Process). The identified material topics were then clustered into three subject areas: Environment, Social and Products. For each material topic, we identified one focal area that we want to prioritize to set an overall strategic orientation. Together with the department responsible for each topic, we defined mid- to long-term ambitions and a first set of measurable targets. We will continue to further elaborate and refine our targets during 2023/24.

1. Materiality assessment

2. Determination of focus areas

3. Identification of potential improvements

4. Target-setting and roadmap

5. Refine mission and vision

Dr. Rolf Roers

Vice President Regulatory Affairs & Sustainability

»The benefits of this strategy process for us as one Rain Carbon are manifold: While setting a clear focus and defining our ambitions and targets, we took the opportunity to make our company's overall vision more tangible and to gain an even better understanding of our contribution to sustainable development.«

Core ambitions per focus area

Environment

We strive to minimize negative effects and foster our positive contribution based on an increasing understanding of our impacts on the environment.

Material topics:

- GHG Emissions & Energy
- Air Emissions
- Waste & Water

Social

We operate responsibly in alignment with universal principles on human and labor rights and provide a reliable and evolving place to work.

Material topics:

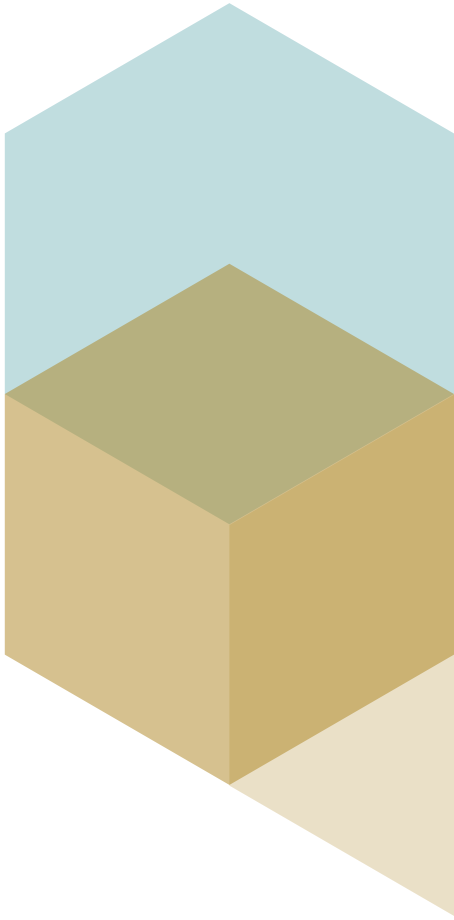
- Health & Safety
- Organizational Resilience

Products

We strive to support the ongoing industrial transformation through our position as a carbon link and provide our clients with innovative products.

Material topics:

- Innovation
- Circularity of Feedstocks



Our preparedness to meet the United Nations Sustainable Development Goals

The United Nations' 17 Sustainable Development Goals (SDGs) are the core of the UN 2030 agenda for sustainable development, which functions as a global plan to fight poverty, endorse sustainable prosperity and protect the planet. In 2020, we initiated our first assessment of the business' core activities as well as social engagement in terms of their SDG contributions. In 2021, the business was further reviewed from the perspective of SDGs based on the SDG Sector Roadmaps for the chemical industry. These roadmaps were developed by the World Business Council for Sustainable Development (WBCSD) for multiple industries. The overall objective is to provide guidance for the wider business communities and prioritize SDGs for a specific sector. Priority SDGs are those where a sector has the highest potential to minimize negative and maximize positive impacts.

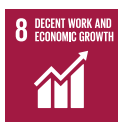
Based on our own analysis, the following SDGs are being considered of highest relevance for Rain Carbon:

Goal 3: Good Health and Well-Being

Goal 4: Quality Education

Goal 6: Clean Water and Sanitation

Goal 7: Affordable and Clean Energy



Goal 8: Decent Work and Economic Growth

Goal 9: Industry, Innovation and Infrastructure

Goal 12: Responsible Consumption and Production

Goal 13: Climate Action

Rain Carbon's contributions to the SDGs are described in the respective chapters of this report.

Many of our products and activities have a positive influence on single or multiple SDGs. However, we are also aware that some of our products and processes have a negative impact on the SDGs, and we are continuously striving to minimize these impacts associated with our products or business activities.

2.3 Sustainability Governance and Responsible Business Conduct

Governance Structure

We are committed to good corporate governance and ensuring accountability at all levels of our company. We have therefore established a organizational structure that ensures the oversight of the organization by the highest governance body, our Board of Directors. The Board consists of the chief executive officer (CEO) of Rain Carbon, the president of Rain Carbon and two non-executive/independent directors. One of the non-executive/independent directors is chairman of the Board. The Board has been appointed to represent Rain Carbon's shareholders and to oversee the management of the company's business.

A set of governance guidelines describes the framework for the Board's organization, operation and tasks, and outlines the expectations for how the Board of Directors should perform its duties.

The Board of Directors and its committees are nominated and appointed by our ultimate holding companies based on the criteria set in the Corporate-Governance Guidelines. These include requirements for an applicant's expertise and skills necessary for the position, as well as for a diversity of viewpoints, backgrounds, experience and other demographic characteristics.

The Corporate-Governance Guidelines also address Board- and executive-compensation matters. The Guidelines define the frequency and criteria for the review of the remuneration of the Board and the process to determine the compensation of the CEO Performance management, including the Board's compensation, is not currently tied to sustainability outcomes.

Through our Code of Business Conduct & Ethics, we require employees and Board members to disclose any conflicts of interest. These include cross-board memberships, cross-shareholdings with suppliers and other stakeholders, the existence of controlling shareholders, related parties, their relationships, transactions and outstanding balances. The required behavior is also described in our Code of Business Conduct & Ethics.

GRI 2–9, 2–10, 2–11, 2–15, 2–18, 2–19

Sustainability Governance

In 2019, Rain Carbon founded the Corporate Sustainability group as part of the Regulatory Affairs & Sustainability department to coordinate and align global and local sustainability activities.

We established a Sustainability Steering Committee (SSC) in 2020, which consists of the CEO, president, chief financial officer and the executive vice presidents of Corporate, Carbon Calcination and Carbon Distillation & Advanced Materials. The work of the SSC is overseen by the Board of Directors.

The role of this committee is to ensure cohesive and systemic global management of the development and execution of Rain Carbon's sustainability strategy. It approves the overall corporate direction and messaging, and defines and monitors the company's sustainability strategy, roadmap and targets. The SSC is also responsible for reviewing and approving Rain Carbon's sustainability-reporting program and the selection of the material topics.

The SSC is supported by the Sustainability Core Team (SCT). The SCT is a cross-divisional and cross-regional team that drives the implementation of sustainability-related decisions and initiatives. The tasks of the SCT include developing proposals for the sustainability strategy and defining the resulting roadmap and concepts, as well as providing the necessary tools for implementing sustainability activities. One important function of the SCT is to connect key collaborators across the organization with the sustainability community to help coordinate the implementation of approved sustainability initiatives and performance measures.

Delegation of responsibility of sustainability management

GRI 2–9, 2–12, 2–13, 2–14, 2–20

The SSC and SCT meet on a quarterly basis to share updates on ongoing projects and activities, and to decide on proposed tools and concepts for implementing sustainability activities. If necessary, sustainability topics are included on the agenda for the quarterly meetings between the Board of Directors and Rain Carbon's executive management team. These meetings are helpful in enhancing the Board's knowledge of sustainability-related developments within the company, ensuring that the Board is aware of any significant company impacts on the environment, economy and people so it is able to make high-level recommendations. The Board is also informed about and involved in important strategic decisions as well as about milestones concerning Rain Carbon's sustainability reporting. Existing processes and policies to measure and minimize Rain Carbon's negative environmental and social impacts are endorsed by the Board of Directors.

GRI 2–12, 2–17

Commitment to Responsible Business Conduct

We strive to continuously minimize the negative impacts and maximize the positive impacts from our business operations to advance sustainable development. Therefore, we conduct our business in alignment with the universal principles of human rights, labor, environmental and anti-corruption standards as laid out in the ILO Declaration on Fundamental Principles and Rights at Work, which guides our internal Code of Business Conduct & Ethics. Our understanding and expectations of ethical and compliant business conduct are described in the Code. We expect every director, officer and employee to demonstrate personal integrity, comply with laws and regulations, and live up to our strong ethical principles. Following the precautionary principle, we are keen to manage our business by aiming to prevent environmental incidents and by controlling emissions and minimizing wastes. To prevent harmful impacts on human health, we are committed to identifying and evaluating health risks related to our operations that might potentially affect employees, contractors or the public. To manage potential risks, we continue to implement appropriate programs and measures.

Our Anti-Bribery & Anti-Corruption Policy promotes compliance with our Code of Business Conduct & Ethics as well as with local, regional and global laws and regulations. Through our Escalation & Reporting Policy, we have established standards for processes and grievance mechanisms related to Rain Carbon's Code of Business Conduct & Ethics and other company policies, as well as applicable laws and regulations.

Enhancing Transparency through External Standards

Our distillation and advanced materials businesses in Belgium and Germany have been awarded the gold medals in the EcoVadis sustainability rating, ranking higher than 95% of the rated companies. Our calcination business in the United States has received a silver medal.

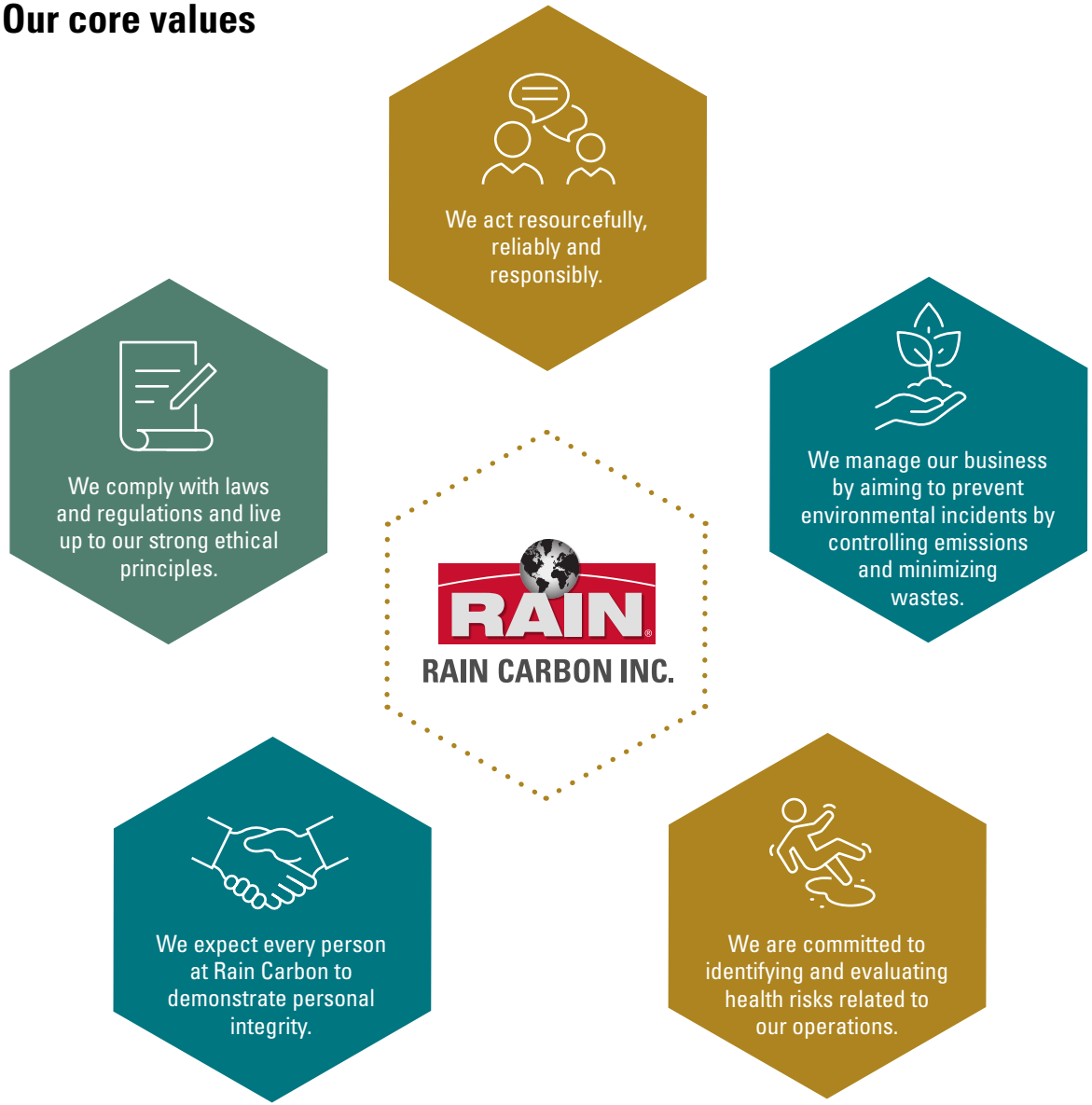
Rain Carbon Germany GmbH has participated in the Carbon Disclosure Project (CDP) and reached Awareness (C) level, illustrating our ambition to assess, analyze and improve our environmental impact.

Rain Carbon supports transparency and compliance risk mitigation along supply chains and thus Rain Carbon German GmbH has gone through the Integrity-Next self assessment to transparently communicate our effort to our customers.

GRI 2–23, 2–24, 2–25

All policies of Rain Carbon are approved by the company's president and are applicable to Rain Carbon Inc. and all its subsidiaries. New employees are informed about our policies during the onboarding process, and all employees are notified of changes via mail. If necessary, employees can seek advice from their local Human Resources (HR) department or the company's Legal department. Concerns can be expressed to their supervisor as well as the Legal and HR departments, depending on the topic. The guidelines are accessible to all employees via the intranet. Our suppliers are required to comply with all applicable laws and regulations as laid out in our agreements.

Our core values



GRI 2–23, 2–24, 2–26

2.4 Stakeholder Engagement

Rain Carbon considers stakeholder engagement as a continuous process. We identify our stakeholders based on impact, influence, interest, legitimacy, urgency and diverse perspectives. These attributes enable us to identify the stakeholders who are most important to our business and facilitate meaningful engagement with them.

We have identified the following stakeholder groups and their needs:

Government/ Regulatory Bodies

As a responsible corporate citizen, we believe that a symbiotic relationship with government and regulatory bodies can bring value to both sides.

Customers

As a customer-centric company, our ability to meet rapidly evolving customer needs is a priority. Through exchanges with our customers, we can identify their needs and adapt and develop our products accordingly.

Employees

Our people, their ideas and their passion are the key forces driving our company forward. Their dedicated approach and innovative mindset bring our ambitions to life.

Investors/ Shareholders

The support of our investors and shareholders is crucial for continuous access to capital, the ability to make progress on our strategies and to reach our objectives.

Vendors/Suppliers

Maintaining a strong relationship with vendors and suppliers of raw materials and indirect services is key to uninterrupted operations and delivery of products.

Local Communities

A good connection with our local communities is key to promoting prosperity and understanding each other's needs.

GRI 2–28

Rain Carbon is the world's largest producer of coal tar pitch, which is upcycled from steel-industry coal tar at our distillation plants, such as the one pictured in Castrop-Rauxel, Germany.

We have different approaches to maintaining contact with our stakeholders (see detailed list in the Annex on page 102. Depending on the stakeholder group, we have different engagement platforms including vendor meetings, supplier meetings, customer visits and meetings, customer feedback, charity engagement and employee engagement. We consider stakeholder engagement important because it provides a continuous and balanced exchange of views, and supports alignment on common interests, particularly regarding sustainability topics in our industries.

Rain Carbon is an active member of multiple industry associations. This enables us to discuss and debate key issues with peer companies, customers and other member organizations. Industry groups, therefore, are an important platform for us to engage with stakeholders on a range of topics including sustainability.

Rain Carbon belongs to various industry associations, including:

- European Chemical Industry Council (Cefic) – Europe
- Verband der Chemischen Industrie e.V. (VCI) – Germany
- essenscia – Belgium
- Creosote Council III – North America
- Pavement Coatings Technology Council (PCTC) – USA and Canada
- Railway Tie Association (RTA) – USA
- American Coke and Coal Chemicals Institute (ACCCI) – North America
- Industrial Energy Consumers of America (IECA) – USA
- Aluminium Stewardship Initiative (ASI) – Global
- Concawe – Europe

GRI 2–28, 2–29

3 Environment

At our production facilities in India, we planted more than 11,000 trees during 2022 as part of our commitment to protecting the environment and enhancing the quality of life in the communities where we operate.

Society depends on nature and the environment for essential, life-sustaining needs such as clean air, water and food. Ongoing environmental degradation, climate change, pollution and other factors already have negative impacts on our way of life, as well as on our economy. These impacts are expected to increase in the future. Regulatory bodies around the world have taken action to fight this degradation by reducing allowable emissions and advancing a more circular economy.

Several of Rain Carbon's value-chain partners are in carbon-intensive industries such as petroleum refining and steel production, which we rely on for our raw materials. Our processes are energy intensive and cause emissions of greenhouse gases (GHGs) and potentially harmful materials (e.g., nitrogen oxides (NO_x), sulfur oxides (SO_x) and particulate matter (PM)) through the combustion of hydrocarbons and chemical processes. While we already have various measures in place to increase efficiency and reduce emissions from combustion, minimizing GHG process emissions is a more difficult task. These are CO_2 emissions that occur due to the chemical reactions in our production facilities, and are therefore directly linked to our production output.

Rain Carbon's key raw materials are industrial by-products that otherwise would be combusted as fuel substitutes generating very high GHG emissions or disposed of as waste. Upcycling these by-products into value-added, carbon-based materials enables us to maximize their productive use by society. Furthermore, our products serve different purposes in downstream applications that have the potential to reduce global GHG emissions. For example, our products are necessary for lithium-ion batteries, which are used in electric vehicles; for anodes used during steel recycling; and for the production of aluminum, which is essential for various lightweight applications. Rain Carbon's products therefore enable processes and commodities that are essential in the low-carbon society we need to achieve.

GRI 3–3

More than

11,000

trees were planted in India by our operations in 2022.

As a manufacturing company in the chemical industry, Rain Carbon's operations generate non-hazardous and hazardous waste, as well as wastewater, that could have a negative impact on the environment and people's health when not properly treated and disposed of. Waste is generated during our major production processes: carbon calcination, carbon distillation and further downstream production of advanced materials. Yet, as our business model is founded on resource efficiency and based on a high conversion rate of raw materials, very little waste is generated. Through effective waste-management programs that focus on reducing, recycling and reusing different waste streams, we can further minimize the negative impacts. This is also in line with our stakeholders' expectation that industrial companies should responsibly manage waste and continuously optimize their processes to reduce waste.

At the same time, Rain Carbon contributes to a circular economy through waste reduction by transforming by-products from other industries – which otherwise would be combusted or disposed of as waste – into value-added materials that are essential components in countless products that people around the world rely on every day (see chapter 4. Products). In doing so, we also have a positive impact by prolonging material cycles across different industries.

Fresh water is used for several industrial purposes at our sites, such as cooling and steam generation. Depending on the site, we extract the freshwater resources for industrial purposes from groundwater, river water or seawater, in addition to supply via third parties. In regions with water stress, such activities by businesses can exacerbate the situation and reduce water availability for local communities. In line with our business model of resource efficiency, we strive to improve our water efficiency as well.

While being used for different purposes, water can become contaminated with various chemicals from our production processes, and can be potentially harmful for the environment and people's health.

GRI 3–3, 303–2, 306–1, 306–2

Rain Carbon is aware of this risk and has sewage systems in place to treat the wastewater before releasing it back into the water bodies.

Environmental Data Management

Employees at our production sites are responsible for handling local environmental data. On a corporate level, environmental data is managed by the SH&E (Safety, Health and Environmental) and Corporate Sustainability departments.

The SH&E department handles all environmental data with respect to requirements from local authorities, such as environmental permits and incidents, as well as the number of excursions. On a global level, every Rain Carbon site is required to submit environmental data each month via SH&E's global key performance indicators tracking system. In addition, since 2019, the Corporate Sustainability team has been responsible for consolidating environmental data for material consumption, energy, GHG emissions, other air emissions, water and waste. In 2021, Rain Carbon conducted a project to optimize internal environmental data collection to align with the Global Reporting Initiative (GRI) standards. This project included a detailed review of the internal data-collection processes and tools in collaboration with an external consultant. The 2022 data presented in this report was externally validated. The independent assurance statement is presented in the Annex on pages 112 and 113.

Our Commitment to the Environment

As part of our Global SH&E Policy, we are committed to conducting business with respect and care for the environment and to eliminating all environmental incidents from our activities. The Global SH&E Policy outlines our global engagement and forms the underlying framework of further site-specific measures.

Rain Carbon's Global SH&E Policy contains the following commitments:

- Protect the health and safety of all who are part of our operations, live in the communities where we operate and use our products.
- Conduct business with respect and care for the environment.
- Have a systematic approach to SH&E management designed to ensure compliance with all laws and achieve our commitments to SH&E.
- Eliminate all injuries, occupational illnesses, unsafe practices and environmental incidents resulting from our activities.
- Strive for world-class operating excellence by integrating our SH&E principles throughout our businesses with a focus on continuous improvement.
- Include SH&E performance in the appraisal of our staff.

GRI 3–3, 303–2, 306–1, 306–2

3.1 Climate Action

SDG 7 Affordable and Clean Energy (sub-target 7.3):

We continuously work toward increasing energy efficiency by implementing energy-management systems, investing in steam and electricity cogeneration and waste-heat recovery plants, and utilizing the energy made by our own processes to the greatest extent possible.

SDG 13 Climate Action:

As a company with energy-intensive processes, GHG emissions and energy are material issues for us. We work to reduce GHG emissions from our process by implementing energy-efficiency projects and installing waste-heat recovery systems. Furthermore, our products have the potential to additionally reduce GHG emissions in downstream products. For example our PETRORES® enables a longer lifetime and improved energy efficiency of lithium-ion batteries, which are essential for decarbonizing the mobility sector.

Material Topic
GHG Emissions and Energy

Climate Action

Ambitions

- We aim to enhance the energy efficiency of our processes.
- We aim to significantly reduce our Scope 1 and 2 GHG emissions.
- We aim to assess and reduce our Scope 3 GHG emissions.

Targets

- We will define a mid- to long-term Scope 1 and 2 GHG reduction target by 2023/24.
- We will evaluate our Scope 3 emissions by 2024.

Our Ambition

In the course of Rain Carbon's sustainability strategy process, we have initiated the development of a GHG-reduction roadmap (for further information see Rain Carbon's Sustainability Strategy, p. 13). We plan to develop a Scope 1 and 2 emission-reduction target in the next two years. In parallel, we will continue to assess our Scope 3 emissions, including the identification of improvement potentials. Regarding Scope 1 and 2 emissions, we are evaluating major emission-reduction potentials, including the switch to renewable energy sources, the electrification of steam production, expanding our waste-heat recovery capacities and process optimization. Regarding our Scope 3 emissions, we recently assessed alternative feedstocks and learned that petro-based products can have an advantage of up to 40% lower carbon footprints compared to conventional coal-tar-based products.

Our Management Approach

The operations management team is responsible and accountable for implementing the Global SH&E Policy and for compliance with Rain Carbon's SH&E requirements. As explained on page 29, local site employees are responsible for data collection and monitoring of GHG emissions and energy consumption. The Corporate Sustainability team is responsible for consolidating the data at a company level. Additionally, Global SH&E and site SH&E personnel manage the reporting of information and data to authorities as required by environmental permits. Global SH&E also acts as the subject-matter expert when regulations or permit requirements change. This information is communicated across multiple levels of our organization.

This process is supported by representatives from both business segments who are part of the Sustainability Core Team. At the site level, multiple actions have been taken to minimize GHG emissions and energy consumption.

GRI 3–3

Our energy-management systems ensure efficient energy use and prevent unnecessary GHG emissions. Our system at the Castrop-Rauxel production facility in Germany has been certified to ISO 50001 since 2014. The systems enable us to continuously strive for higher energy efficiencies, for example, by replacing old equipment with newer, more efficient equipment. These energy-management systems also include monitoring of planned and actual savings from energy-efficiency projects.

In addition, some of our sites are certified in accordance with the requirements and guidelines of international standards:

- Germany: ISO management systems 9001, 14001, ISO 45001
- Belgium: ISO management systems 9001 and 14001, ISO 45001
- Canada: ISO management systems 9001 and 14001, ISO 45001
- USA: ISO 9001-2015
- India: ISO 9001-2015 (Visakhapatnam)

In addition to the ISO 9001 quality-management certification covering general business processes, sites that have an ISO 14001 environmental-management system in place must fulfill and/or exceed the requirements using strict targets and control measures.

Complementary to our continuous efforts to reduce our negative environmental impact through management systems, we are systematically improving our occupational health and safety management (ISO 45001).

Mike Tillman

Executive Vice President Carbon Calcination

»80% of Rain Carbon's Scope 1 emissions are related to our calcination plants. At the same time, our calcination activities enable us to produce significant amounts of clean electricity from our waste-heat recovery systems, which strongly contribute to the reduction of our overall greenhhouse gas emissions.«

GRI 3–3

Key Measures and Actions

We continuously look for opportunities and technologies to improve our environmental performance. In 2021, the Carbon segment conducted a feasibility study on carbon capture, utilization and storage (CCUS) to determine whether this could be an option to reduce GHG emissions at our calcination plants. Immediate implementation is not realistic as the technology is cost prohibitive at this time. However, we continue to monitor such technological possibilities and will implement them if and when circumstances allow. Several of our aluminum-smelting customers are evaluating advanced CCUS technologies, and they have a vested interest in promoting these through the raw material supply chain if successful.

The new hydrogenated hydrocarbon resins production facility in Castrop-Rauxel, Germany, is the cornerstone of our Advanced Materials segment and our commitment to produce 21st-century materials for cleaner, lighter and faster products and applications.

GRI 3–3

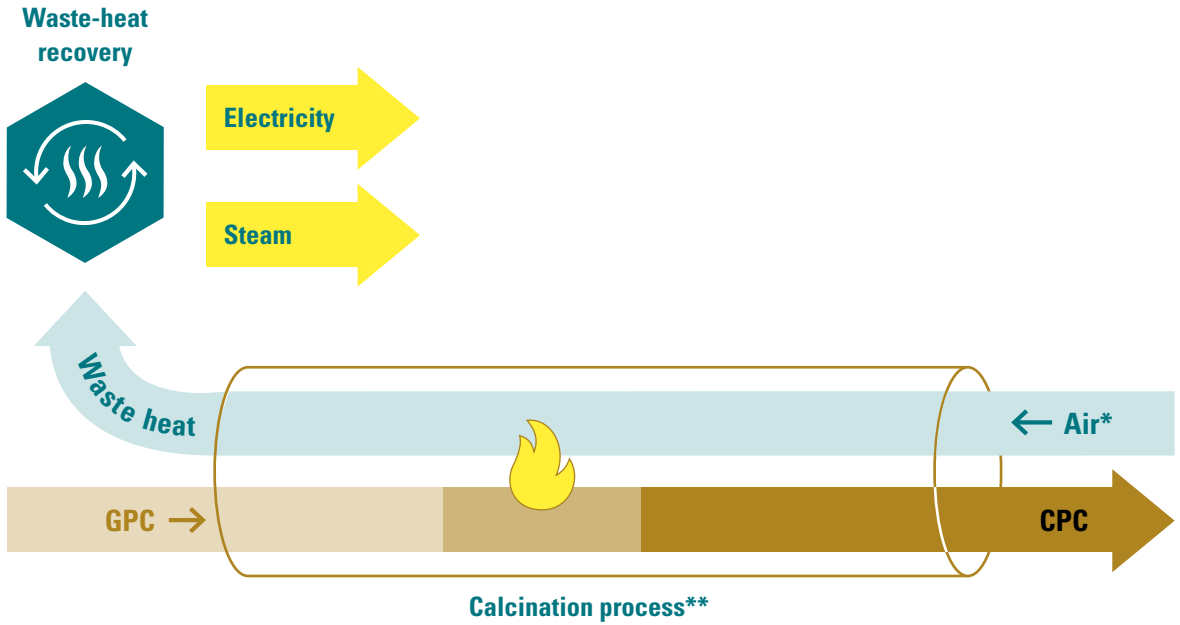
Since 1982, Rain Carbon has reduced its emissions by using energy from waste heat in waste-heat recovery systems and plants for the cogeneration of heat and power. They reduce the need for additional energy from external sources and maximize energy efficiency (i.e., avoid loss of energy that has already caused GHG emissions).

The electricity and steam that is produced from our waste-heat recovery systems are used internally, and excess is provided to neighboring companies and local power grids. At most of our carbon distillation and advanced materials sites, we link our production processes with the cogeneration of energy, and supply the steam generated in our exothermic processes to external parties or other parts of our production facilities. Our carbon calcination plants at Lake Charles, Chalmette, Norco (United States) as well as Visakhapatnam and Atchutapuram (India) cogenerate clean energy from waste heat and, hence, mitigate the respective CO_2 emissions from power stations producing an equivalent electrical output.

Calcination and energy-production facility, Lake Charles, Louisiana, USA

GRI 3–3

Waste-heat recovery in the calcination process



GPC = green petroleum coke

CPC = calcined petroleum coke

* Natural gas is used during start-up

** During calcination, GPC is upgraded to CPC

In 2022, we generated 1,054 GWh of energy from waste-heat recovery, avoiding[2] the emission of 349 kt CO_2-equivalent across both business segments. In the calcination business, we generate and sell far more energy (740 GWh) than we consume to operate our plants (248 GWh).

During the next three years, steam production at our Hamilton site (Canada) will be fully electrified, enabling the plant to vastly reduce its use of natural gas for power generation. Once the project is finished by 2025, GHG emissions from this site are expected to be cut in half. This will act as a pilot project for the possible implementation at other sites.

[2] Avoided emissions are calculated based on the emissions of the energy source that would otherwise be used to supply the amount of energy if our waste-heat recovery system was not in place. In case of electricity production, we use the emission factor of the local power grid, and in the case of sold steam, we use the emission factor of the plant that would have generated the steam in the steam network.

A new furnace installed in 2022 at our continuous tar distillation unit in Castrop-Rauxel, Germany, will yield an energy savings of approximately 30%.

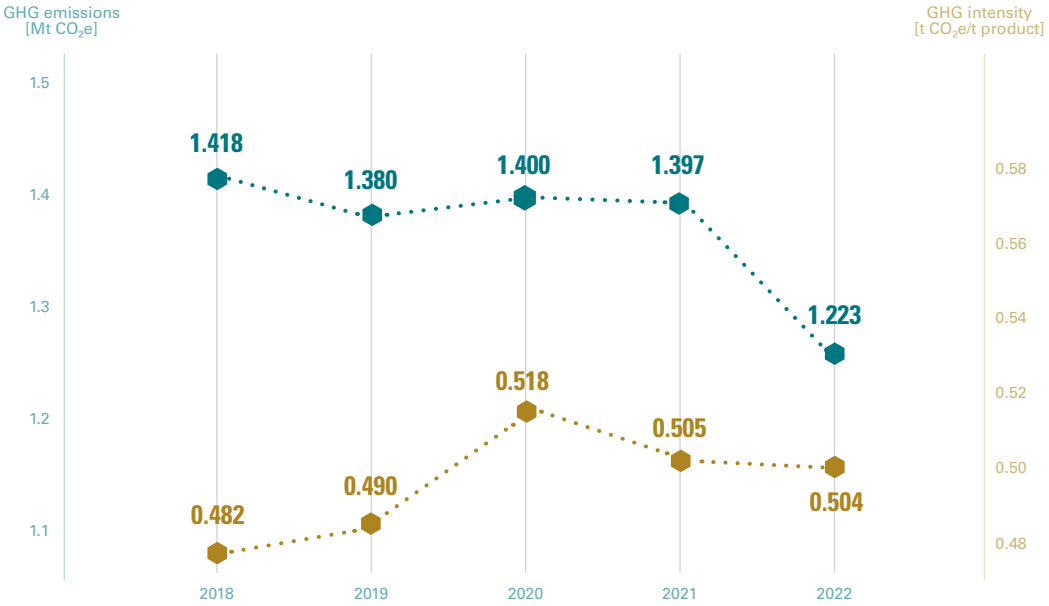
As a result of detailed energy-efficiency audits we conducted at all six calcination plants in the US, a project to implement efficiency improvements which was initiated in 2022. Another focus for our calcination business in 2022 was quantifying its CO_2 process emissions. Rain Carbon's calcining operations account for approximately 80% of Rain Carbon's global CO_2 emissions, and most of this is driven by combustion of GPC volatile matter and fines in the process. Rain Carbon has continuous emissions monitoring systems (CEMS) with CO_2 analyzers at three of its calcining plants in Louisiana, USA. This data is now being studied in detail and will be used to quantify process changes, which will help reduce CO_2 emissions.

One major study, started in 2022, was a comparison of CO_2 emissions measured by our CEMS units versus CO_2 emissions calculated via a mass-balance approach. For plants where we do not have waste-heat recovery systems, the stack exhaust temperatures are much higher, and it is very difficult to get a CEMS probe to perform reliably. For these plants, we need to calculate our total CO_2 emissions, and this is not trivial, given the amount of process variables that can impact the results. This new study will add more certainty to our calculation methods.

Apart from implementing new technologies and changing production processes, we can have positive effects by regularly renewing our existing infrastructure with state-of-the-art technology. This not only ensures the reliability of our production facilities and safety of our employees, but also reduce our impact on the environment. In 2022, one furnace at our site in Castrop-Rauxel (Germany) was replaced, with three more planned for 2023 and 2024 and at least two more by the end of 2025. Besides fulfilling the new requirements for NO_x critical values, the specific energy consumption of each new furnace is going to be reduced by around 30%.

GRI 3–3

Rain Carbon's greenhouse gas emissions (Scope 1+2)



We have traced and evaluated our GHG emissions in a systematic and standardized way since 2018. During this timeframe, our operations were challenged by a global pandemic and a war in Europe, which also impacted our GHG emissions.
In 2020 the output of our carbon distillation and advanced materials businesses decreased along with an increase of our more emissions-intensive calcination business, leading to an overall higher GHG intensity. The steep reduction of GHG emissions in 2022 was the result of significantly decreased production volumes due to a global reduction of demand in our industries, accompanied by an energy shortage in Europe. We expect our energy-efficiency measures and other GHG emissions-reduction projects to positively impact our GHG intensity over the next years.

Evaluation and Outlook

To measure the impact of our actions, the Corporate Sustainability team annually collects global sustainability data, and consolidates and summarizes environmental data – including energy and GHG emissions data – from all sites for reporting purposes. In 2021, we conducted a massive project to professionalize our data-collection processes and align these with the GRI standards. After implementation of the new process for the 2021 environmental data, including external validation of the data, the revision of historic data has been completed as far back as 2018.

Major indicators are our energy input and GHG emissions. A total energy input of 1.7 million MWh is accompanied with approximately 1.2 million tons of CO_2-equivalent total GHG emissions. Our energy consumption is dominated by the distillation and advanced materials facilities, while our total GHG emissions are primarily related to the calcination business.

The calcination plants produce approximately 80% of Rain Carbon's total Scope 1 emissions, 98% of which are directly related to the calcination of green petroleum coke, mostly through the combustion of volatile matter and small particles. We plan to further optimize our production processes to enhance the yield of CPC during the calcination process. As losses in raw materials are mostly converted to CO_2 during calcination, a higher efficiency of the process allows for a significant reduction of GHG emissions.

The major emission source for the distillation and advanced materials plants (20% of total Scope 1) is the combustion of fossil fuels to generate energy for our processes (79%) followed by emissions from the chemical processing of phthalic anhydride (17%). Similar to the project that was started in Hamilton (Canada), we plan to evaluate the electrification of steam production at other applicable sites as well.

GRI 3–3, 305–1, 305–2

Scope 2 emissions are comparably small with around 42,000 tons of CO_2-equivalent and result from the purchase of grid electricity and steam. These are especially low, mainly because the distillation operations at our largest site at Castrop-Rauxel in Germany possess an energy center that internally produces electricity for the plant instead of purchasing electricity from the grid. Secondly, very little energy (from fossil fuels or electricity) is needed for calcination since the process generates excess heat that we utilize to power the operations.

In both business segments, we employ waste-heat recovery (WHR) systems that allow us to generate considerable amounts of electricity and steam. While part of this waste-heat energy is used internally, most of it is sold to local electricity grids or neighboring plants. By using WHR systems, we avoided[3] GHG emissions that amounted to nearly 350,000 tons of CO_2-equivalent in 2022. Aiming to enhance this positive effect, we continue to evaluate further potentials of WHR and avoid unnecessary energy consumption.

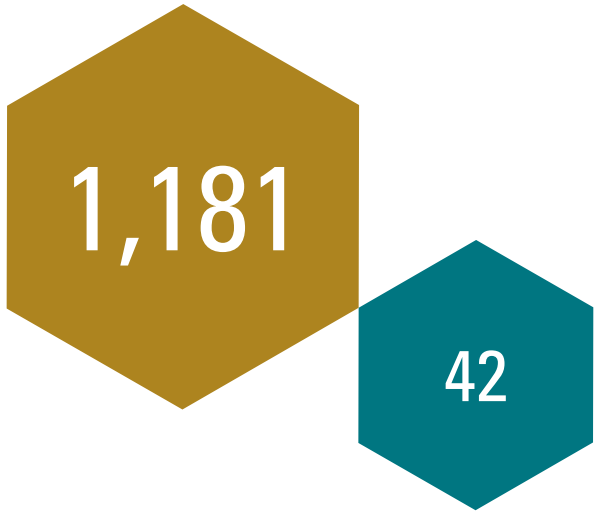
In addition to the generation of electricity and steam from waste-heat recovery, we are assessing strategic cooperation with industrial companies for the installation of photovoltaics on site. Through generation of green electricity for our own demand and purchasing renewable electricity from other providers, we could significantly lower our Scope 2 emissions further.

As we develop our GHG strategy and roadmap, we will continue to define our GHG targets in 2024. In 2022, we started a systematic assessment of our Scope 1 and 2 reduction potentials and have identified major levers in our operations.

[3] Avoided emissions are calculated based on the emissions of the energy source that would otherwise be used to supply the amount of energy if our waste-heat recovery system was not in place. In case of electricity production, we use the emission factor of the local power grid, and in the case of sold steam, we use the emission factor of the plant that would have generated the steam in the steam network.

Rain Carbon's total GHG emissions by scope

in kt CO_2-equivalent, total in 2022



Emitted directly (Scope 1)
from sources we own or control such as on-site combustion (process gas, natural gas, heating oil, diesel).

Emitted indirectly (Scope 2)
from the generation of purchased energy like electricity and steam.

GRI 3–3, 305–1, 305–2

3.2 Standardized Waste and Water Management

SDG 6 Clean Water and Sanitation (sub-targets 6.3, 6.4):

We rely on water in several of our production processes, and we are aware of our responsibility with regard to protecting and preserving this valuable resource. We are also a supplier of the key raw material in activated carbon, which is used to absorb hazardous chemicals from air, water and in wastewater-treatment applications.

Material Topic
Waste & Water

Standardized Waste and Water Management

Ambitions

- We aim to establish a standardized annual assessment of local operations, improvement potentials (e.g., stream separation), including exchange of best practices between sites and business units.
- We aim to continuously evaluate best practices to reduce Rain Carbon's global footprint in the areas of waste and water.

Targets

- We will establish an annual exchange of best practices (non-GHG air emissions, waste and water) on a business-unit level (2023).
- We will establish an annual exchange of best practices (non-GHG air emissions, waste and water) on a global level (2024).
- We will develop a systematic approach toward evaluating best practices.

Our Ambition

We aim to reach the highest level of resource efficiency in converting as much raw material as possible into products, thereby minimizing waste and wastewater volumes. Hazardous and non-hazardous waste is recovered and re-used if possible. Local waste that cannot be re-used is disposed of in accordance with local and/or national environmental laws and wastewater is treated accordingly. Since many of Rain Carbon's primary products are made from by-products from the petroleum and steel industries, we effectively and efficiently reduce product waste from those and other industries while also maximizing the carbon productivity of those by-products. It is our ambition to foster the exchange between sites to realize synergy potentials.

Our Management Approach

In addition to the Global SH&E Policy, local policies are established by some sites to strengthen our global commitment to prevent and reduce waste and wastewater streams. Similarly, we work to minimize our water consumption with respect to local regulations as well as to reduce any direct impacts on the surrounding community.

As explained earlier, employees at each of our production sites are responsible for collection and monitoring of waste and water data, and the Corporate Sustainability team is responsible for consolidating the data on a company-wide level. Thus, local waste and water management is handled by each site individually, and waste inventories are maintained by local site personnel. Monitoring is established where required by regulations, and the specific site waste-management approach is based on local legal requirements and regulations.

GRI 3–3, 303–1, 303–2, 306–2

The Zelzate distillation and advanced materials plant in Belgium was our first to receive a Gold corporate social responsibility rating from EcoVadis.

Additional requirements apply to sites that have an environmental-management system in place, especially at our locations that are ISO 14001-certified.

While there is no company-wide management system for the topics of water and wastewater yet, apart from the Global SH&E Policies, the sites manage them individually through their local personnel. Wastewater and water management is specific to each site due to different production processes and the varying regulatory and permit requirements between regions and countries. All of the company's sites meet or exceed the permit requirements that were set up by the local regulatory agencies.

Internal wastewater-treatment and sewage plants are maintained by Rain Carbon's employees on site. If no internal wastewater treatment is available, third-party contracts are in place to ensure a compliant treatment of wastewater.

At the plants in India, a zero-effluent policy is in place, which prescribes the treatment and reuse of wastewater and prevents any discharge offsite. Purified water is used for watering the green belts, which are dedicated areas of greenery in India's cities.

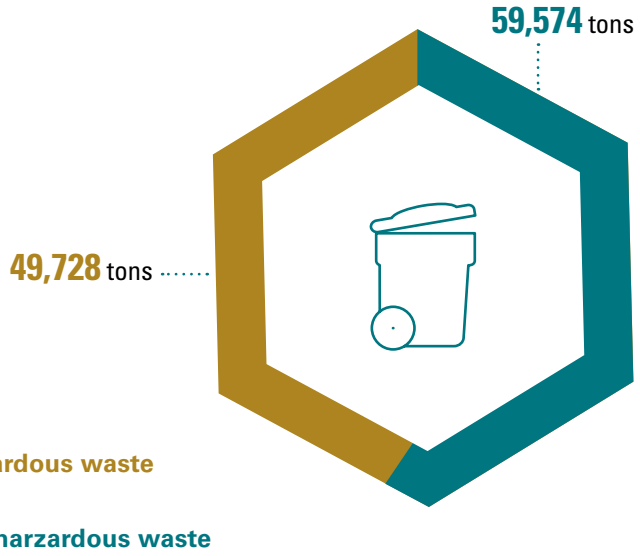
Key Measures and Actions

Since different production processes are carried out at our sites and varying conditions apply, site-specific measures are necessary to reach our targets most efficiently and effectively.

At our plant in Hamilton (Canada), for example, we recover the pitch residues from emptied storage tanks in special vacuum boxes, which eliminates fugitive pitch-dust emissions. The pitch dust could otherwise threaten the health of people and wildlife in the surrounding areas. The recovered pitch residues are remelted for use as a saleable product. This internal recycling leads to a reduction of hazardous waste and minimizes employee exposure to potentially hazardous dust.

GRI 3–3, 303–1, 303–2

Waste generated



At the Zelzate plant in Belgium, we remove sulfur from the high-purity benzene production to a level of <1ppm. The sulfur is converted to sulfuric acid, which is then sold to other industries for further use, like the conversion into fertilizers. Here, similar to our overall business model, a by-product or waste component is further converted to a useful chemical instead of going to waste.

Waste-minimization is a guiding principle

At our calcination facilities in the United States, the lime by-product from our flue-gas desulfurization systems is used in a variety of agricultural and geo-mechanical applications. We have obtained beneficial-use permits that cover a significant volume of the spent lime generated by our U.S. calciners for use in soil-calcium and pH adjustment, as well as for soil-stabilization applications. This value-added use of the spent lime is a more sustainable application than sending the material to a landfill for disposal. We also continue to evaluate other higher-value applications for our spent lime such as portland cement production and calcium sulfo-aluminate cement production. The latter has a lower CO_2 footprint compared to traditional portland cement and brings some benefits with respect to more rapid setting time. At our Visakhapatnam, calcination site in India, the spent lime generated by our flue-gas desulfurization has for years been used to produce construction bricks.

To further reduce our impact on water bodies, be it through water withdrawal or wastewater discharge, various actions have been taken and are being planned. All wastewater streams at our sites are collected and treated internally or externally through third parties. In general, Rain Carbon tries to divide wastewater streams as early as possible to reach a best-achievable recycling rate and use specifically adjusted sewage techniques for each separate stream.

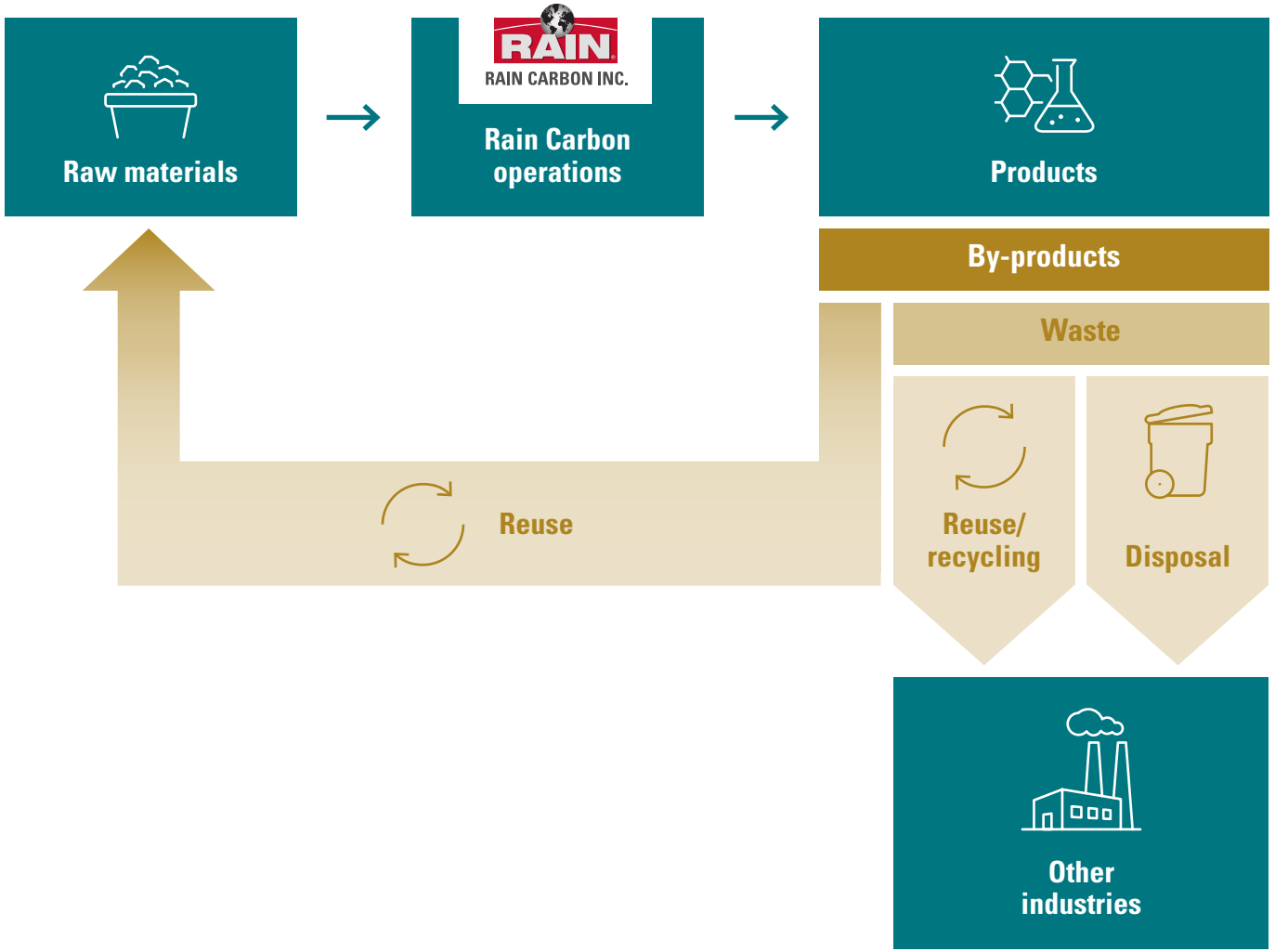
Due to the structure of some sites, contamination of rainwater can be a possibility. Where this is the case (e.g., in Duisburg, Castrop-Rauxel, Germany, and Hamilton, Canada), rainwater is collected and treated to minimize external impacts. At the plant in Zelzate (Belgium), for example, leak-free pumps and periodical measurement systems have been installed and are accompanied by routine inspections by the site personnel. As pumps and other equipment are, in general, mostly located outdoors, leak prevention is an important measure against rainwater contamination.

GRI 3–3, 303–1, 303–2, 306–2, 306–3

Waste-minimization at Rain Carbon

To increase the recycling rate and minimize scrapping of GPC, the Gramercy calcination plant operates a water-treatment plant. Particles of green petroleum coke fines that are lost during the calcination process are recovered from settling ponds on the plant site. The reclaimed GPC fines can be recycled as feedstock that can then be transformed into a usable CPC product. Since 2018, this minimizes raw material waste at the plant and discharged into the environment.

Several studies have been conducted at different sites to assess the potential to recylcle water and avoid wastewater by using activated charcoal or reverse-osmosis. Those technologies can filter hazardous substances from wastewater to improve its quality to a level where it can be reused or safely disposed of. Immediate implementation is not realistic as the technology is currently still cost prohibitive. We will continue to monitor such opportunities and will implement them if circumstances allow.



GRI 3–3, 303–1, 303–2, 306–2

Evaluation and Outlook

The Corporate Sustainability team annually collects global sustainability data, with environmental information from all sites, including waste and water data. The data is consolidated and summarized for reporting purposes and disclosed in this report (see chapter Data & Performance, pp. 91, 92). In 2022, a total of approximately 109,300 metric tons of waste was generated, of which 55% was non-hazardous.

In addition to the global environmental-data collection, waste and water streams are tracked monthly at the site level with follow-up on the amounts, planning and other activities since some local sites have specific waste and wastewater permits with required limits. The monthly and quarterly environmental indicators that monitor waste streams and waste data are reported by our production facilities to the local regulatory agencies. Wastewater streams are tracked more frequently, as potential impacts can be bigger. Depending on the local requirements, wastewater streams are tracked continuously or on a daily, weekly, or monthly basis.

Settling ponds at our Gramercy calcination plant in the United States enable us to reclaim green petroleum coke fines that can be recycled as feedstock for calcining.

To further increase positive impacts from our waste streams in the future, we intend to implement best-achievable control technologies, which may include waste-collection and-recovery systems or increased waste-monitoring and-treatment systems, in accordance with any local environmental permit changes.

GRI 3–3, 306–3

3.3 Monitored and Reduced Air Emissions (non-GHG)

SUSTAINABLE DEVELOPMENT GOALS

SDG 3 Good Health and Well-Being (sub-target 3.9):

Safety and health are of central importance to us during manufacturing and the downstream use of our products. We are committed to reducing our impact on the environment and neighboring communities through multiple measures, such as continuous emissions-monitoring systems and our leak-detection and repair projects.

SDG 12 Responsible Consumption and Production (sub-target 12.4):

Taking responsibility for our actions is expressed through our multiple measures to reduce environmental emissions, such as our widespread use of flue-gas desulfurization.

Material Topic
Air Emissions

Our Ambition

Our production processes result in GHG and other air emissions. To minimize negative impacts on health and environment, we strive to reduce the generation and release of these air emissions. It is our ambition to foster the exchange of best practices and other information between our production sites to realize synergy potentials.

Our Management Approach

As explained earlier, local site employees are responsible for data collection and monitoring of air-emission data, while the Corporate Sustainability team is responsible for consolidating the data on a company-wide level. Thus, local air-emission topics are managed by each site individually, primarily through an environmental permit system in conjunction with local regulatory agencies. Monitoring of air emissions is established where required by regulations and follows site-specific approaches based on these local requirements.

Each year, our ISO 14001-certified sites go through a review process to assess areas of potential improvement that could reduce emissions. This review includes updates to key processing equipment including, but not limited to, scrubber systems, off-stream gas-routing systems, waste-collection and -tracking systems, and outfall-monitoring systems. All systems must meet or exceed site environmental-permit requirements.

The Corporate Sustainability team annually collects global environmental sustainability data from all sites (including NO_x, SO_x, particulate matter, volatile organic compounds and hazardous air pollutants). The data are consolidated and summarized for reporting purposes. Local environmental teams complete routine reporting (monthly, quarterly, annually) for regulatory agencies to demonstrate our compliance with air-emission permits.

Monitored and Reduced Air Emissions (non-GHG)

Ambitions

- We aim to establish a standardized annual assessment of local operations and improvement potentials, including exchange on best practices between sites and business units.
- We aim to continuously evaluate best practices to reduce Rain Carbon's global footprint in the area of non-GHG air emissions.

Targets

- We will establish an annual exchange of best practices (non-GHG air emissions, waste and water) on a business-unit level (2023).
- We will establish an annual exchange of best practices (non-GHG air emissions, waste and water) on a global level (2024).
- We will develop a systematic approach toward evaluating best practices.

GRI 3–3

Many of our plants have continuous emissions-monitoring systems installed, that allow us to immediately react to changes, minimizing negative effects on employees, environment and neighboring communities.

To ensure the measures we implement serve their intended purpose, we have various tracking and monitoring mechanisms installed at our sites. Three of our six US calcination plants at Chalmette, Lake Charles and Norco, as well as our calcination plants in India have local tracking processes such as continuous emissions-monitoring systems (CEMS), site alarms and other monitors that are connected to a distributed control system. The CEMS are used for ongoing permit compliance and have to be tested annually in a relative-accuracy test audit. This is done via a stack test where the readings are compared to the CEMS readings to make sure the CEMS is properly calibrated. Several carbon distillation and advanced materials plants also have installed CEMS. At our Zelzate plant in Belgium, it is directly connected to the management system of the local regulatory authority and shares the environmental reports with site management to update them on the status.

Key Measures and Actions

Rain Carbon takes various actions to minimize the negative impacts that our air emissions can cause. For example, a leak-detection and -repair (LDAR) program was implemented at our carbon distillation and advanced materials plants to proactively and regularly check for fugitive losses of hazardous benzene, toluene and xylene (BTX) emissions. The program was initiated in 2010 at the Zelzate facility in Belgium, and due to its success, a similar program was rolled out at the Castrop-Rauxel and Hamilton distillation facilities in Germany and Canada, respectively. Each year, an external company performs a comprehensive audit to identify BTX leaks. Detected leaks are then repaired as soon as possible. The LDAR project enables us to constantly monitor and reduce hazardous BTX emissions at our facilities and is a major contributor to continuously minimizing our environmental impact.

Equipped with a state-of-the-art flue-gas desulfurization system, our new vertical-shaft calciner in India is the most environmentally friendly plant of its kind in the world.

We have also installed various systems to reduce air emissions at our sites, such as flue-gas desulfurization (FGD) systems and pyroscrubbers. Rain Carbon minimizes SO_x emissions at our calcination and distillation facilities by utilizing FGD systems. We have operated our Visakhapatnam calciner in India with a high-efficiency, lime-based FGD system since its commissioning in 1998. Over the last decade, we have added, dedicated FGD systems at our Chalmette and Lake Charles calciners in the United States and have improved the efficiency of the existing FGD system at the Norco facility. In addition, our recently commissioned new vertical-shaft calcination facility in India is equipped with a state-of-the-art FGD system that removes more than 99% of the plant's SO_2 emissions.

Reduced air emissions through flue-gas desulfurization systems, leak-detection and-repair projects, and continuous emissions monitoring systems at many of our production facilities play a significant role in reducing Rain Carbon's environmental impact. Shown here is the FGD system at Chalmette.

In 2018, as part of India's effort to reduce air pollution, the government implemented significant restrictions on the ability of India's calciners to import GPC and prohibited calciners from importing any CPC. In 2022, the Ministry of Environment, Forests and Climate Change circulated a draft standard for comment that would require calciners to scrub SO_2 and control particulate matter levels to levels below 150 and 50 mg/Nm³ respectively if the standard is adopted. No timeline for implementation of this standard has been given but it is expected to become mandatory at some point. It will require that all established calciners importing GPC have installed flue-gas desulfurization (FGD) and particulate-matter control systems that operate with high efficiency. Currently, Rain Carbon is the only calciner in India with installed FGD systems operating at or above the court-mandated threshold.

In July 2021, Rain Carbon engaged The Council of Scientific Industrial Research – National Environmental Engineering Research Institute (CSIR-NEERI) to perform an independent assessment of the positive impact of our pollution-control activities, as part of the company's effort to gain unrestricted access to GPC and CPC imports. In September, CSIR-NEERI published its report, which looks specifically at the reduced emissions resulting from the use of FGD and WHR systems for electricity generation at our Visakhapatnam calcination facility and the new vertical-shaft calciner in Atchutapuram.

In terms of the plants' state-of-the-art FGD systems, CSIR-NEERI concluded that they have more than 98% scrubbing efficiency, thereby making them among the cleanest CPC manufacturing units from an environmental perspective. CSIR-NEERI also found that our ability to cogenerate power (40 MW at the Visakhapatnam plant and 15 MW at the Atchutapuram plant), and thus replace an equivalent amount of electricity from coal-fired power plants, provides a major environmental benefit.

GRI 3–3

According to CSIR-NEERI, the GHG emissions are set to zero when power generation is obtained by steam generated from waste-heat recovery systems compared with estimated GHG emissions of 1,537 and 576 tons per day when using coal to generate 40 MW and 15 MW of electricity, at the Visakhapatnam and Atchutapuram plants respectively. Therefore, our CPC manufacturing in India results in an overall reduction of SO_x emissions, flyash generation and greenhouse gas emissions (due to reduced coal consumption) for an equivalent amount of power generation.

Our FGD systems enable us to stay in full compliance with the environmental operating-permit limits for SO_x, NO_x and particulate matter. Our goal is to maintain 100% compliance and minimize our impact on the environment and in the communities where we operate. Any process excursions or events that have the potential to impact the environment are thoroughly documented and reported to local and national regulatory agencies. Each negative impact is investigated in collaboration with the affected stakeholders and assigned a corrective action by a team of environmental professionals, in agreement with operations personnel. Major negative impacts are discussed, and mitigation steps are assigned by regulatory agencies to reduce or prevent future negative impacts. These mitigation steps are communicated to site personnel, and control measures are put in place.

Evaluation and Outlook

To measure the impact of our actions, the Corporate Sustainability team annually collects global sustainability data, consolidating and summarizing environmental data from all sites for reporting purposes. The majority of air emissions are related to our calcination activities, with 86% of NO_x emissions and 97% of SO_x emissions stemming from its production processes. Carbon distillation and advanced materials processes have a comparably small footprint for air emissions. On average, they emit 0.59 kg NO_x and 6.6 kg SO_x per ton of product.

>98%

SO_2 removal efficiency at our Indian calciners.

An ammonia-based SO_2 scrubber at the Atchutapuram vertical-shaft calciner went into commercial operation along with the new plant in 2022. The FGD is capable of very high SO_2 removal efficiency (>98%), and we have already achieved this performance level. We managed to optimize the quality of the ammonium sulfate that is generated as a scrubber by-product and begun commercial sales of this important agricultural product.

4 Products

Rain Carbon leverages more than 150 years of expertise to produce carbon materials that meet the requirements of our customers and markets, changing regulatory requirements and the evolving expectations of society.

As the global impacts of consumption such as climate change, declining biodiversity, environmental pollution, resource wastage and unfair working conditions continue to grow, the demand for more sustainable products is increasing. We believe the demand for such products will be a key innovation driver for many businesses in the future, particularly in light of the evolving expectations of both our customers and downstream users. The chemical industry, in particular, has increasingly integrated products with reduced environmental footprints into its portfolio, as part of discussions around the concepts of circular economy and value chains.

By offering more environmentally friendly products, we can make a positive contribution toward these global challenges, while reducing the environmental footprint of our company and products. Developing new products with reduced environmental footprints or processing carbon-rich materials with sustainable attributes to optimize current products for resource- and energy-efficient applications are ways Rain Carbon can contribute.

GRI 3–3

Our resin products play an important role in helping consumers achieve their sustainability goals. When used in tire applications, our resins reduce rolling resistance thereby improving a car's fuel efficiency.

Our expertise in processing carbon materials will strengthen business opportunities due to the increased focus on recycling and the circular-economy concept by our customers and other stakeholders. On the one hand, a transition to circular feedstocks of by-products from other industrial processes could reduce the use of conventional resources and the emissions produced during the combustion of by-products such as coal tar and green petroleum coke (GPC).

On the other hand, our current business model strongly depends on by-products of oil refining and steel production. As the availability of coal tar and GPC feedstocks continues to decline due to disruptive changes in both the steel and oil industries we have already begun to strengthen our proven innovation capabilities. This will allow us to keep pace with our changing external environment so we can identify and develop alternative carbon-rich materials and feedstocks. This will also require close collaboration with other industries, like the waste-management industry, in the future and possibly new business models.

As we supply our customers with raw materials for their respective industries, our efforts to develop a more innovative and sustainable product portfolio will have an impact far beyond Rain Carbon's customers. The majority of our product-development activities are based on market or customer inputs and are performed in close contact with customers starting from the Design and Development stage. This requires an active management of intellectual-property rights. A recent example of successful product innovation in a close collaboration with customers is the development of resins applied as tackifiers in tires. An enabler for an eye-level exchange with the tire customer has been the development of a state-of-the-art rubber-application lab at our Duisburg facility in Germany. It allows us to test our resin products under the conditions and the environment the tire customers are interested in. In the calcination business, Rain Carbon has worked successfully with multiple customers to introduce new GPC feedstocks that were historically considered unusable by the industry.

GRI 3–3

Kris Vanherbergen
Executive Vice President
Carbon Distillation & Advanced Materials

»By developing and manufacturing products with high levels of carbon productivity, we are enabling more sustainable end applications and contributing to a higher level of circularity.«

An increasing number of customer requests for new products are based on their sustainability targets. An environmentally friendly product portfolio from our side will enable our customers to act more responsibly at their end. This was the main driver in our effort to attain ISCC PLUS certification in our resins business as well as for the constant search for alternative sustainable raw materials for our businesses. Alternative carbon sources including renewable (bio-based and recycled) carbon are an essential part of Rain Carbon's present and future innovation activities leading to better environmental sustainability of our products and applications. We also believe this will provide enhanced security of the raw materials we need, leading to improved economic sustainability.

NOVARES® resins decrease a car's energy consumption by reducing rolling and abrasion resistance in tires.

Research and development in the automotive tire industry has shown that certain additives in tire compositions can positively impact the energy consumption of cars. Our internal analysis has shown that the addition of selected NOVARES® resins in tire compounds results in a 16% better rolling resistance than the standard rubber mixture. Based on internal estimates, this improved rolling resistance has the potential to save 0.82 tons of CO_2 emissions over the lifetime of an average family car (mileage of 200,000 km).

4.1 Innovative Products and Processes

SDG 9 Industry, Innovation and Infrastructure (sub-targets 9.2, 9.4):

We support a resilient infrastructure with products for the transportation and construction industries, such as creosote to extend the life of wood railroad ties, sealers for asphalt as well as corrosion-resistant coatings for use in marine infrastructure, ships and shipping containers.

Innovative Products and Processes

Material Topic
Innovation

Ambitions

- We aim to innovate our product portfolio and manufacturing processes according to environmental-sustainability criteria.
- We aim to support the on-going industrial transformation with products used in applications to achieve lower environmental footprints and favorable life-cycle benefits.
- We aim to innovate Rain Carbon's business model in selected cutting edge market segments.

Targets

- We will develop resin products based on recycled or renewable monomers by 2026.
- We will switch from a pure selection of aromatic industrial by-product streams for carbon-precursor production to the synthetic processing of suitable precursor raw materials by 2026.
- We will develop hard carbon precursors and final hard carbon electrode materials for sodium-ion batteries by 2028.
- We will commercialize ACP by second half of 2024.

Our Ambition

The development of new products, the processes to manufacture them as well as their technical applications are all important to Rain Carbon's ambition of continuously improving and sustaining our business. By constantly enhancing our expertise and incorporating the latest research-and-development (R&D) results, we are committed to contribute to continued sustainable development. Our efforts in R&D help to differentiate ourselves from competitors, and our continuous improvement efforts help to meet our stakeholders' expectations.

Our business segments and sub-segments have established individual goals regarding the sale of new products developed and launched in the last five years. For example, our resins business aims to generate 25% of its revenue from new products by 2026.

Our Management Approach

The management team for each business segment and sub-segment is responsible for developing its own business strategy. Product and technology-innovation strategies are closely aligned with each segment's business strategy.

In 2021, the carbon distillation and advanced materials businesses redesigned their product-innovation activities with an updated project- and portfolio-management process. The objective was to select the best projects and optimize the product-innovation pipeline of the businesses, based on several factors, like strategic, technical, financial, or commercial considerations.

GRI 3–3

Signage received by the Federal Ministry of Education & Research in Germany for the participation in the national R&D support program for industrial research and development

The new product-innovation business process was introduced during 2022 and is now applied for all product-innovation projects in the carbon distillation and advanced materials businesses. It is supported by a customized software-based tool that is used for the management of product innovation as well as the industrial CAPEX projects. In this way, the piloting and industrialization of new products and processes could be formally connected with the industrial project engineering. This facilitates the interfaces required, allows the necessary knowledge exchange, and fosters collaboration across departments.

A systematic project assessment based on strategic, technical, financial, commercial and sustainability criteria allows for comparability of projects and the overall fit with major strategic directions.

A project-management platform coordinator has been appointed to overview the business process, guide project managers, and identify and propose process improvements to management. The first leading key performance indicators have been introduced for each new product-development project as well as the project portfolio to measure the innovation performance and to steer investment and project-prioritization decisions. Responsibility for decisions related to the project portfolio, the product roadmaps and the future product portfolio lies with each business segment's management and commercial departments. In the carbon calcination business, product and process innovations are discussed as needed during monthly meetings. Within the carbon distillation and advanced materials business, product and technology innovation – including product roadmap, strategic investments in R&D and strategic targeted markets – are defined by an innovation steering committee that is composed of leaders from our commercial, R&D and operations groups.

In addition, many of the product-innovation projects performed by our R&D competence centers in Germany and Belgium were approved by national and European programs of R&D support.

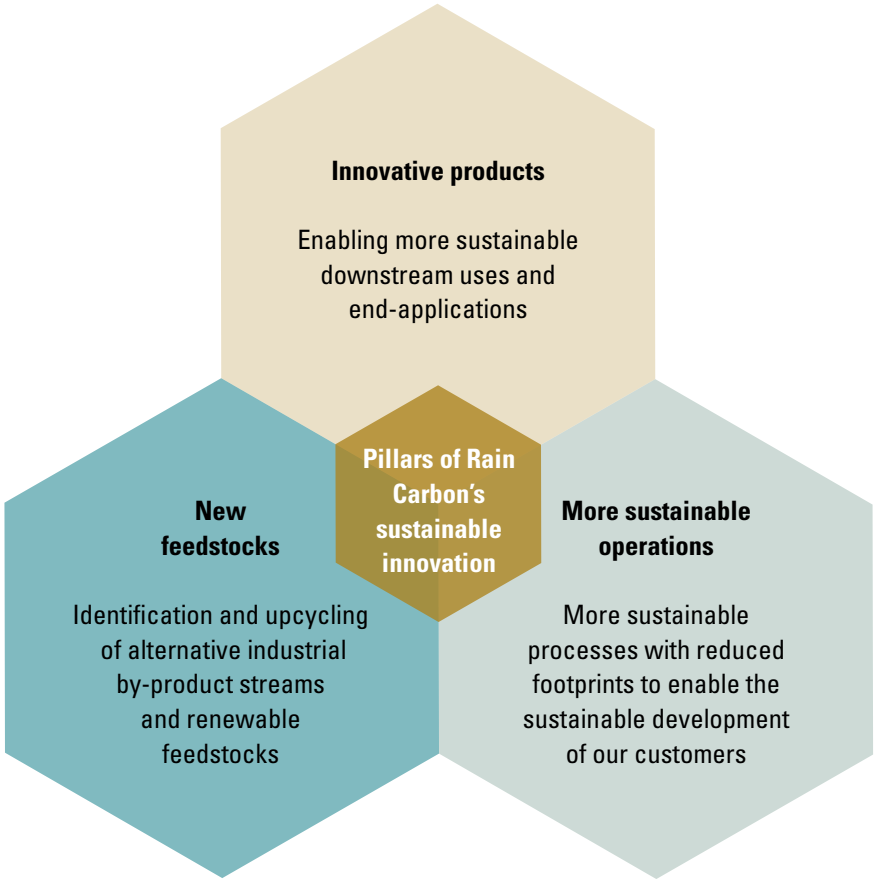
When it comes to the development of innovative and sustainable products, we consider three kinds of products as environmentally friendly:

1. Products and manufacturing processes that have an improved environmental profile in comparison to standard traditional technology. This could include the processing of feedstocks with reduced environmental footprints.

2. Products that reduce emissions for customers and downstream users.

3. Products that contribute to sustainable downstream applications in general and function as an enabler of the sustainable industry transformation, such as anodes for aluminum production, electrodes for the steel-recycling process and carbon-based materials for batteries to support electromobility and battery energy storage.

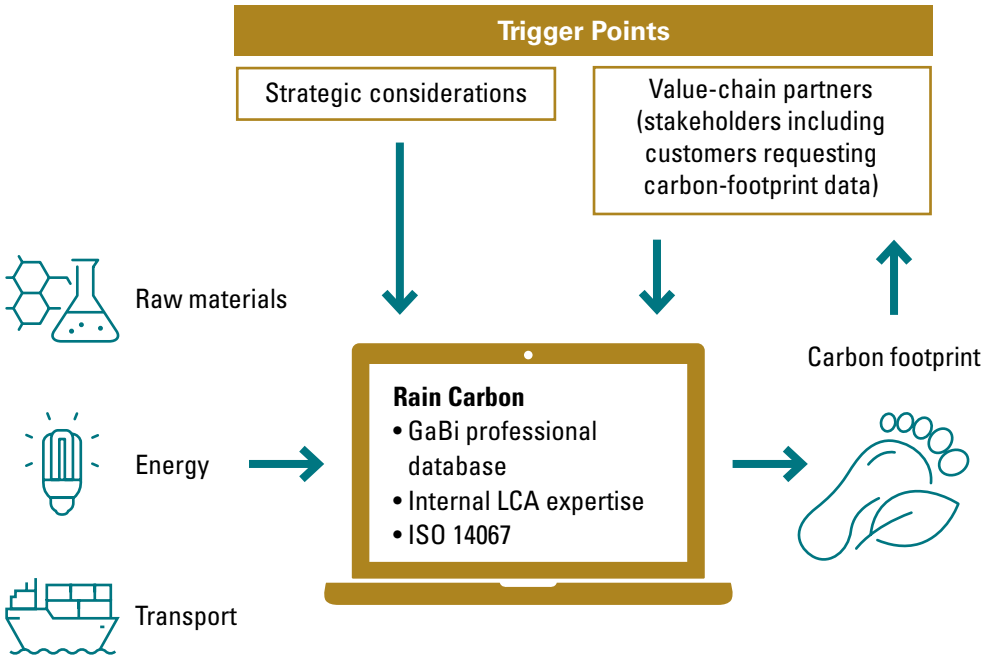
The present technology and product innovation strategy at Rain Carbon is built on the following pillars:



Our anode-grade CPC produced in calciners equipped with waste-heat recovery results in a smaller carbon footprint, enabling aluminum producers to move closer to their goal of producing low-carbon aluminum.

GRI 3–3

Carbon-Footprint Methodology



Key Measures and Actions

Product carbon-footprint studies are a tool to assess the sustainability of our overall product portfolio, particularly with respect to climate change. The assessments are globally standardized and have become an important point of reference for industries and global value chains.

Based on information regarding the raw materials used and transport processes, for example, as well as energy consumption and emissions, we are able to model carbon footprints for our products according to ISO 14067. We are using the internationally recognized GaBi Professional software for these assessments to provide the most accurate results to our customers.

In 2020, we conducted our first carbon-footprint study of the Visakhapatnam calciner in India, and during 2021 the Corporate Sustainability team advanced the infrastructure necessary to conduct lifecycle assessments and carbon-footprint studies for our products. Standard processes and procedures were implemented, and product carbon-footprint assessments were conducted to support the increasing demand from our customers for transparency related to the product carbon footprints along their chain and ours.

Carbon-footprint studies conducted in 2021 included assessments of our Zelzate benzene-production facility in Belgium and our CARBORES® products from our Castrop-Rauxel facility in Germany. We also started an evaluation of the aluminum value chain with one of our customers that was finalized in 2022. The data we collect from these studies help us to better understand our impacts and prepare more effective measures to mitigate them.

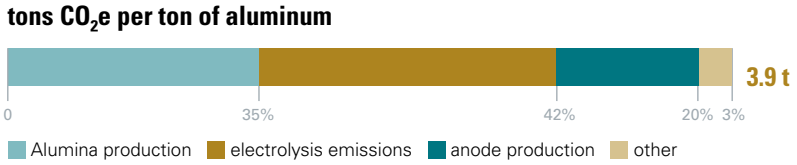
Carbon-footprint studies are increasingly applied in the selection of development projects for new product lines and line extensions. In 2022, we continued with the calculation of product-specific carbon footprints for our NOVARES® resins, pitch, naphthalene, creosote oil and carbon black oil.

In most cases, the supply of raw materials dominated the carbon-footprint results, followed by the generation of steam, which is required during Rain Carbon's processes. Complementary to the product carbon-footprint calculations, we have started the evaluation of our company carbon-footprint in 2022 and will continue this work in 2023. The data we collect from these studies will help us to better understand our impacts and prepare more effective measures to mitigate them.

In 2022, we finalized an aluminum value-chain study, which included a detailed product carbon-footprint analysis of the Alouette primary aluminum smelter in Canada (see story at right). Alouette is a major customer of Rain Carbon utilizing both our coal tar pitch (CTP) and calcined petroleum coke (CPC) products. It is the largest aluminum smelter in North and South America and produces low-carbon aluminum using hydroelectric power. The study is the first of its kind to use a large body of primary emissions data to estimate the cradle-to-gate emissions for primary aluminum production. It is also the first study in the world to provide a detailed product carbon-footprint of the anode supply chain including CTP and CPC. The study shows that Alouette produces amongst the lowest carbon primary aluminum in the world. This is helped in part by the lower carbon-footprint of the CPC we supply to Alouette as a result of the waste heat recovery system at our Lake Charles calciner.

New product in our calcination business
During 2021, the Carbon segment started to work on improvements related to specific emissions within its calcination business. One improvement is a new process to convert fine particle-size GPC into anhydrous carbon pellets (ACP), which makes it possible to use our proprietary ACP as an input material in the calcining process. This development results in lower CO_2 and SO_x emissions during calcination, the production of a greater quantity of the product from the same quantity of raw material, and an increased lifespan of derived products, such as anodes in the electrochemical production of aluminum.

Breakdown of the carbon-footprint for the Alouette aluminum smelter



Aluminum value-chain study

The results of our aluminum value-chain study were published in a peer-reviewed technical paper in the Journal of Metals in September 2022. The study shows that Alouette produces among the lowest carbon primary aluminum in the world with total Scope 1,2 and 3 emissions of 3,914 kg CO_2e/ton of aluminum. Some hydroelectric-powered smelters achieve the <4 tons CO_2e/ton of aluminum target needed to qualify their product as low-carbon aluminum by including only Scope 1 and 2 emissions. For Alouette to achieve <4 tons with all cradle-to-gate emissions included is a significant achievement. It means their carbon footprint is approximately 75% lower than a global average aluminum smelter and approximately 25% lower than the average Canadian hydroelectric- powered smelter.

The CPC provided to Alouette from our US calciner in Lake Charles has a CO_2 footprint that is 16% lower than CPC provided from a calciner without waste- heat recovery and power generation. The total anode-production supply chain including green petroleum coke, coal tar, CPC and CTP production contributes 20% to the overall carbon footprint of the Alouette smelter. Rain Carbon provided all the modeling work of the study and took the lead in writing and publishing the paper.

Anhydrous carbon pellets should allow for higher productivity in the aluminum industry, while reducing our carbon emissions and maximizing yields. Left photo shows ACP on a feed belt heading to a rotary-kiln drier and right-hand photo shows calcined ACP.

In 2022, Rain Carbon commissioned an ACP plant at its Chalmette calcining plant in the US. Most of the year was spent optimizing the production process, and an extended production run in October produced a high-quality (high bulk density) product. We have begun conducting full-scale industrial trials of this material with several key customers. Additional modifications of the plant at Chalmette will be required to increase the throughput/productivity before the plant will be commercially viable. This work is planned for 2023.

Another major milestone on the product side from the calcination business was the first commercial sale of CPC from the new vertical-shaft calciner in Atchutapuram, India, in 2022. This is a new technology for Rain Carbon that produces CPC in a different calcining process relative to a rotary kiln. The technology has three primary benefits for Rain Carbon. It produces a higher bulk-density product compared to a rotary-kiln calciner, which is highly sought after by our customers.

It also produces more CPC per ton of GPC due to a significantly lower combustion of fines during the calcination process, which improves the calciner economics for high-cost GPC feedstocks. The third benefit is related to the lower fines loss and means the CPC produced by the shaft calciner has lower CO_2 and SO_2 emissions per ton of CPC compared to our rotary kiln product.

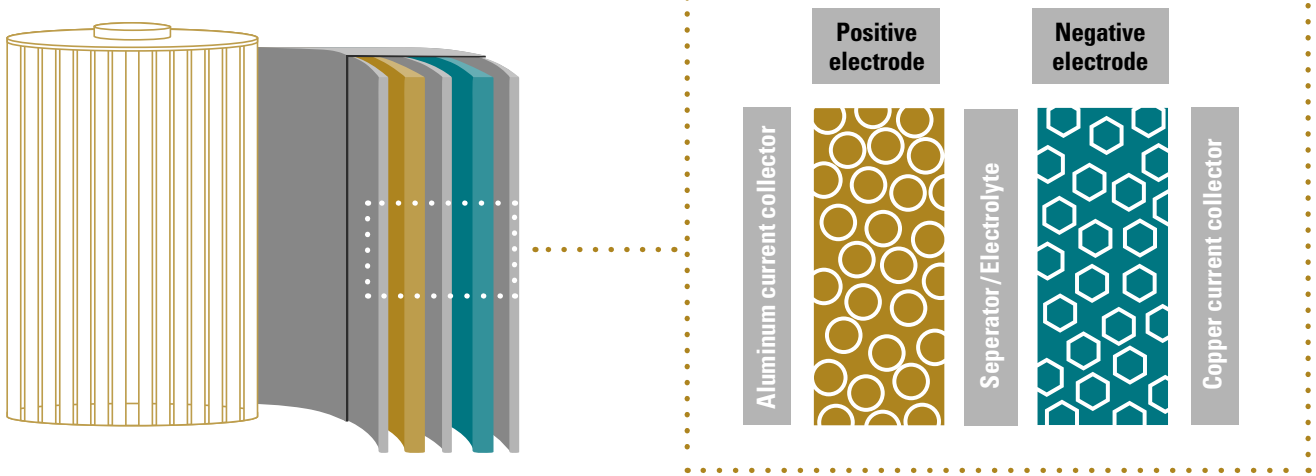
The new calciner also uses a different and highly efficient ammonia-based SO_2 scrubbing technology that is capable of removing >98% of the SO_2 generated in the calcining process. The scrubber also produces a valuable ammonium sulfate by-product, which is used as a fertilizer in agricultural applications. The successful completion and commercial operation of this project represents a major product and process innovation for Rain Carbon. The company has done extensive development work in the past to evaluate vertical-shaft technology including the purchase and operation of a small shaft calciner in China and extensive laboratory and pilot anode studies on the shaft-calciner product.

New products for energy storage

Our Advanced Materials segment added two new products in 2021 to its line of Engineered Products that are used to produce battery anode materials for lithium-ion batteries – the enabler of the growing electromobility trend. PETRORES® 150 and LiONCOAT® LM are thermoplastic carbon precursors produced by the upcycling of industrial by-product streams to transform them into high-yield carbon. In 2022, the production footprint of these product lines was further expanded to provide contingency and security of supply to our customers in the disruptive market of battery cells and battery materials.

Thermoplastic carbon precursors are used in the production of graphite-based battery anode materials for lithium-ion batteries. These batteries are used in consumer electronics like smartphones and laptop computers, and are the battery of choice used in electric vehicles. Lithium-ion batteries will also play an essential role in battery energy storage for peak-shaving in the electric grid required for the increasing amount of renewable electricity.

Battery Materials



Our contributions:
We provide essential materials for the electrodes used in lithium-ion batteries. Our PETRORES® products act as precursors for coating and binding of battery anode materials. Conductive carbon black produced by our special carbon black oils provides conductive properties to the positive electrode. Additionally, the aluminum used as a current collector could not be produced without our products.

contains conductive carbon produced with our special carbon black oils

contains electrode materials produced with our PETRORES® and LiONCOAT® carbon precursors

Lithium-ion batteries

Recently, the high energy density and increasing durability of modern lithium-ion batteries has become the enabler in the electrification of the transportation sector – a fast-growing market due to high customer demand and tightening regulations on CO_2 emissions around the world. Lithium-ion batteries are also expected to play a major role in stationary battery energy-storage applications, such as buffering of the peak power supply and consumption in the electrical grid. This is gaining increasing importance with higher reliance on intermittent renewable energy sources like solar and wind power and higher electricity demand due to electromobility.

As the demand for batteries increases, we are working closely with battery-material producers to expand and innovate our PETRORES® and LiONCOAT® product lines. Our PETRORES® products are specifically developed precursors used to create the amorphous carbon layer – several tens of nanometers in thickness – that act as a coating for the graphite and silicon-containing powders used in all lithium-ion batteries. These carbon layers are essential for battery-cell performance as they positively influence a battery's durability, safety and energy capacity, as well as its charging and discharging speed.

Vertical-shaft calciner in India and its product CPC

Market introduction of NOVARES® *pure* series

Our product line of safe, non-toxic and odorless hydrocarbon resin products was enhanced by the introduction of pure monomer resins NOVARES® TM85 AS and TM100 AS for tires, coatings, and adhesive applications. We also launched improved formulations of our family of NOVARES® *pure* hydrogenated hydrocarbon resins, which have been well received by our customers. Examples of application developments conducted this year for products enabling more sustainable downstream technology are the NOVARES® *pure* 1120 and 2120 products. Their improved properties allow them to be used as additives in high-density polyethylene (HDPE) compounds. They improve the stiffness of HDPE and allows those compounds to be used as a replacement of polystyrene, which grants them much better recyclability than polystyrene.

Switch from coal- to petro-based raw materials

The transition from coal tar-based to upcycled petroleum-based aromatic industrial by-product streams in 2022 was a high priority for our company as well as our customers in the rubber, coatings, and adhesives industries. The shift to aromatics produced with petro-tar has resulted in a decreased carbon footprint of up to 18% and improved the security of supply of these broadly used products. The transition was motivated by an expected decrease in availability of coal tar in Europe in the future. For Rain Carbon, this transition marks a historic point in our development as it ended the internal supply of resin-oil raw materials from our coal tar distillation facility in Castrop-Rauxel to the resin production facilities at the Duisburg site.

The switch to the petro-based indene fractions for the manufacture of our NOVARES® C resin product line for the tire and adhesives markets could successfully be achieved by adjusting product formulations and process parameters. Most customers have accepted and approved the transition to the petro-based products as the impact on the performance parameters was neglectable or low and could be compensated for the application. More than 1,000 tons of NOVARES® C resin product based on the new recipes already have been produced by the end of 2022. Customers will not only benefit from the economic sustainability linked to the raw material switch as future security of supply is thereby ensured. The new products will also contribute to a lower carbon footprint of up to 18% in the downstream products.

The screening of resin monomers from renewable and recycling sources will eventually result in the development of completely new hydrocarbon resin product types.

The process efficiency regarding throughput, yield, and energy consumption of the resin production facility in Duisburg was further optimized in 2022 resulting in an efficiency gain of more than 10%.

Product innovation highlights 2022

Switch from carbo-indene to petro-indene in the manufacture of the NOVARES® C resin series

New pure monomer resins NOVARES® TM85 AS and TM100 AS

New petroleum-based aromatic raw material stream for carbon precursor production

Addition of NOVARES® *pure* 1120 or 2120 increases stiffness of HDPE compounds

LiONCOAT® LM and PETRORES® 150 carbon precursors for lithium-ion battery anode materials

New process to convert fine particle-size GPC into anyhydrous carbon pellets (ACP)

Industrial-scale CPC from the new shaft calciner in Atchutapuram

Evaluation and Outlook

Rain Carbon monitors the success of product innovation by the annual sales revenue of products launched during the last five years. Additionally, the introduction of leading indicators will help to steer product-innovation activities in the future. Improving the efficiency of our product-innovation processes, combined with our strategic investments in R&D, should allow us to achieve our business-growth targets and enhance the sustainability of our product portfolios.

In our carbon distillation and advanced materials businesses, the R&D intensity in 2022 was 0.44% of its total sales revenue compared to 0.61% in 2021 and 0.71% in 2020 even though the total expenditures in R&D slightly increased. The decrease can be explained by the significantly increasing sales revenue after a strong recovery from the COVID-19 pandemic. The new products that were developed and launched in the last five years contributed in 2022 with 3.54% to the total sales revenue of the carbon distillation and advanced materials businesses compared to 1.87% in 2021. The resins and modifiers business, which has an R&D intensity of around 1%, made an important contribution to this total: The percentage of sales revenue by new products launched to the market in the last five years in the total annual sales revenue of the resins and modifiers business reached 10.9% in 2021 and increased further to 20.2% in 2022. This percentage of new product sales should increase further with a minimum of 25% in 2026 for the resins and modifiers business.

The development efforts for the thermoplastic carbon precursors for battery anode-material production should further increase in 2023. As a part of this effort, Rain Carbon is part of a European Research & Innovation project (conducted by a consortium of 12 companies and academic centers representing all tiers of the value chain from the battery raw materials to the end-use of the battery and battery recycling) that will target the sustainable production of synthetic graphite battery anode materials for lithium-ion batteries. Rain Carbon will contribute through its Competence Center Precursors & Distillates in Zelzate as well as its Competence Center Carbon Technology in Castrop-Rauxel. The project proposal was awarded by a grant from the European Commission.

Our NOVARES® *pure* "waterwhite" resins are ideal for food packaging, hygiene products and other applications where non-toxic, odor-free, or colorless materials are essential.

Sodium-ion batteries are considered a possible alternative to lithium-ion batteries for applications that permit lower cell capacities per battery volume and weight than lithium-ion batteries. This battery technology has been scaled by early adoptors and could emerge especially for stationary applications like battery energy storage. Sodium-ion batteries could reduce the demand for lithium used for lithium-ion battery materials and that is limited in availability. Present sodium-ion battery cells contain non-graphitizable amorphous carbon (so-called hard carbon) as the electrochemically active material in negative electrodes. Rain Carbon's carbon precursor products could function as raw materials in the manufacture of hard carbon, and our R&D team will engage in the development of such products.

GRI 3–3

The identification of new aromatic raw material streams for our carbon distillation processes and the manufacture of thermoplastic carbon precursors used for coating, binding and impregnation materials on the basis of carbon is essential for our future business and therefore represents a substantial part of our R&D initiatives.

The availability of coal tar – one of our traditional by-product raw materials that we upcycle to create pitch and distillate fractions – has started to decline in several parts of the world with strong greenhouse gas reduction ambitions. The reason for the decline is that the steel industry, which produces coal tar as a by-product, is transitioning its their production away from the blast-furnace process toward more environmentally friendly technologies like direct reduction, lowering the need for coal. At the same time, the need for thermoplastic carbon precursor materials is expected to further increase, driven by the need for carbon electrodes for aluminum production and graphite electrodes for steel production in electric-arc furnaces.

The declining availability of coal tar is a strong motivator in our search for alternative aromatic raw material streams for our products. We are convinced that a pure selection of aromatic raw material streams will not be sufficient to satisfy the future demand. In addition, we know it will be critical to be able to transform raw materials that previously could not be processed in the manufacture of our products into suitable raw materials by thermal or chemical treatments. We also must consider new by-product streams that will be created with future industrial processes, by-product streams from recycling processes or renewable by-products.

The first results of these R&D efforts have been promising with our ability to integrate an increasing amount of petroleum-based raw material streams into our manufacturing processes over recent years.

The carbon calcination business has worked intensively to develop its anhydrous carbon pellets, which should be commercially available in the second half of 2024.

The business tracks the effectiveness of sustainable products once they are commercially available by measuring and quantifying the benefit on kiln yield, greenhouse gas and SO_x emissions, and product quality.

Dr. Michael Spahr
Vice President Innovations Carbon Distillation and Advanced Materials

» Innovation for sustainability at Rain Carbon considers the development of new products, manufacturing processes, as well as technical applications and markets for existing and new products. While our goals are long-term, we have already delivered some beneficial short-term results for our business. This is a huge motivation for us to increase our focus on product innovation and the expansion of our business model when it comes to the upcycling of industrial by-products. We also want to leverage our capabilities and strengths in helping to identify new business models, which will be essential for the future success of our company as well as our customers. «

GRI 3–3

4.2 Enhanced Circularity

SUSTAINABLE DEVELOPMENT GOALS

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

SDG 12 Responsible Consumption and Production (sub-targets 12.2, 12.4, 12.5, 12.6):

Our business model is based on resource efficiency as we transform by-products from other industries and utilize them to create new materials while preventing them from being used as combustion fuels. Responsible production is further expressed through our activities to reduce environmental emissions, such as our widespread use of flue-gas desulfurization, continuous emission-monitoring systems and our leak-detection and-repair projects.

Material Topic
Circularity of Feedstocks

Enhanced Circularity

Ambitions	Targets
• We aim to expand Rain Carbon's upcycling to new industrial by-products. • We aim to foster Rain Carbon's position as "the carbon link" to enable a circular economy.	• We will switch from a pure selection of aromatic industrial by-product streams for carbon precursor production to the synthetic processing of additional precursor raw materials to expand our upcycling activities by 2026.

Our Ambition

We strive for high levels of resource efficiency in our processes to avoid the unnecessary consumption of finite resources. With our activities, we help to avoid waste and additional emissions in upstream and downstream industries. Through the upcycling of otherwise combusted by-products from the steel and petrochemical industries, we prolong the lifetime of carbon-containing materials. We convert those raw materials into value-added products that enable higher circularity levels in downstream applications, like aluminum production or steel recycling. In the future, we see opportunities to expand our upcycling activities by broadening our raw material base and supporting customers with their circularity ambitions.

Our Management Approach

Strategic raw material-related decisions are made by the management of each business segment based on availability and desired strategic positioning. The topics of feedstocks and feedstock availability are discussed during weekly business-segment meetings.

The responsibility for raw material-related decisions lies with the management of each business segment, as well as with the respective operations or site management team supported by the R&D department. Within the carbon distillation and advanced materials business, the R&D Competence Center for Precursors & Distillates in Zelzate, Belgium – which has technical expertise on carbon- and petroleum-based raw material streams – is responsible for identifying new and alternative feedstocks for the global business segment and identifies the measures to be able to integrate them in the industrial processes. In addition, in collaboration with our R&D Process Technology Platform, it supports local operations management in the introduction of the new feedstocks to the production processes.

The group is responsible for broadening our raw materials platform, conducting laboratory-scale assessments of new feedstocks and the pre-processing of feedstocks to make them suitable for use in our plants. These new feedstocks can be alternative, conventional, renewable or recycled materials.

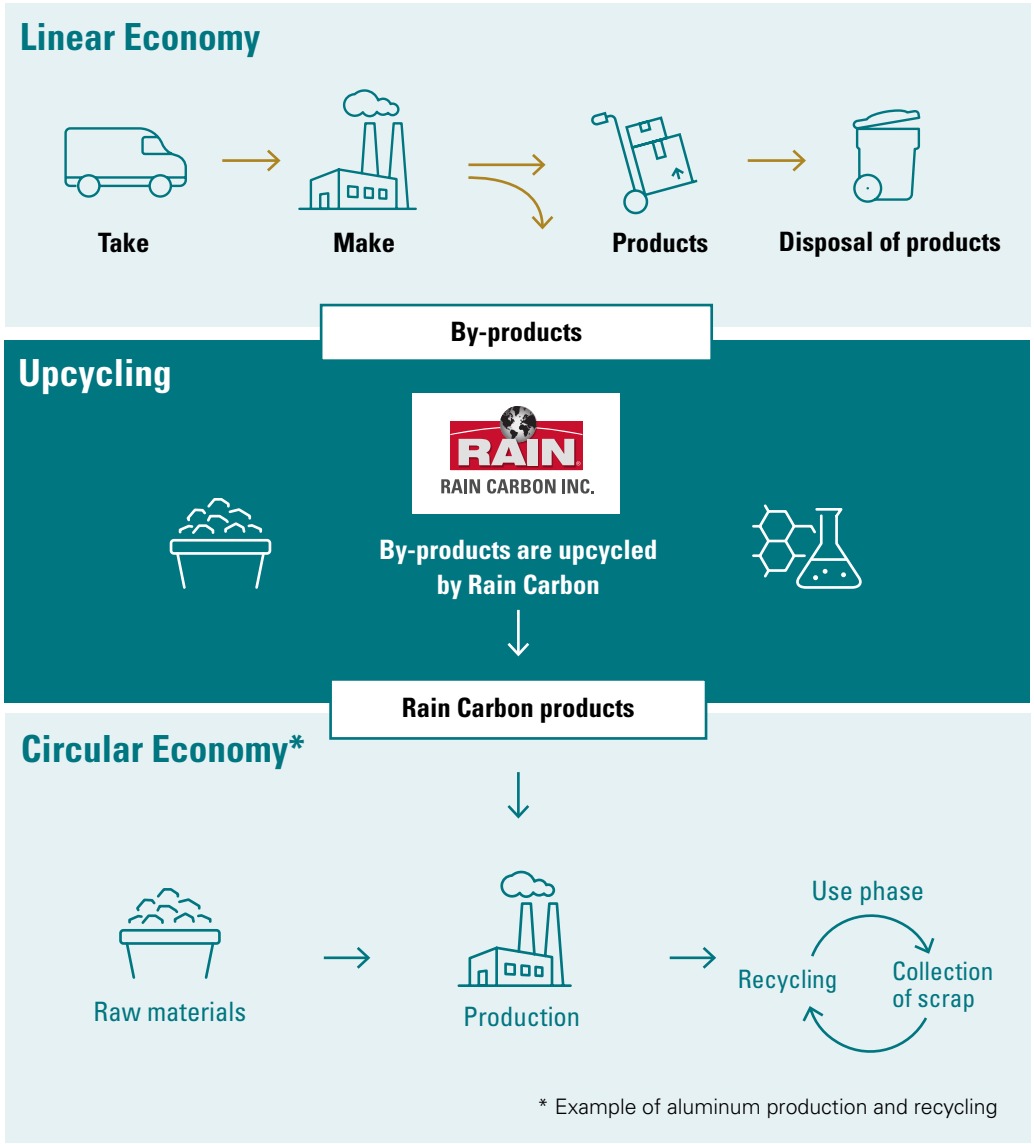
Although the production of CPC completely relies on raw materials that are by-products of the petroleum-refining industry, the carbon segment continues to evaluate biomass feedstock alternatives, which currently, do not meet customers' performance criteria.

Key Measures and Actions

In 2021, Rain Carbon kicked off an intensive investigation into how to replace and sustain our coal tar raw material streams with aromatic petroleum-based raw material streams for our Distilled Carbon Products and Engineered Products line, as elaborated in the Innovative Products and Processes chapter.

Because many of the targeted petroleum-based raw material streams are currently being combusted in refineries and petrochemical plants as secondary fuels, their use for added-value carbon precursors matches the company's business model of upcycling industrial by-products. At the same time, the use of these raw material streams supports the overall objective to lower the carbon footprint of our petrochemical products. Many of these carbon-precursor products are expected to be used in future technologies that will gradually replace technologies with higher carbon footprints. For example, graphite electrodes for electric-arc furnaces are replacing blast furnaces for steel production, and the manufacture of carbon-based electrode materials for lithium-ion batteries will enable the electromobility trend. Rain Carbon intends to build a broader and more flexible raw material platform of sustainable streams to ensure the security of supply and support the activities of our customers in reducing carbon emissions in their supply chains.

Rain Carbon's upcycling contributes to a circular economy



Advanced Materials' ISCC PLUS initiative

In our advanced materials segment, we have developed additional indicators to monitor the number of products made from sustainable feedstocks from 2022 onward. Sustainable feedstocks refer to all types of sustainable carbon, such as bio-based streams or those derived from recycling.

This initiative includes certification under the International Sustainability and Carbon Certification (ISCC PLUS) scheme. ISCC is a recognized organization that certifies bio-based or recycled feedstocks across the entire value chain, from source to end-product. Using the concept of mass balancing, amounts of sustainable raw materials are added at the beginning of the value chain and mathematically allocated to the respective amounts of products. Mass balancing and allocation ensures that an equivalent amount of sustainable raw materials is present in the value chain. Overall, the chemical industry is becoming more sustainable, with increasing proportions of ISCC PLUS-certified material.

With the ISCC PLUS certification for our Duisburg site beginning in early 2023, we will be able to offer certain 100% ISCC PLUS-certified Rain Carbon products based on mass allocation.

We believe this initiative is an important next step in transparently increasing the sustainability and circularity levels of Rain Carbon's value chains.

Rain Carbon's pilot anode-preparation and test center in Castrop-Rauxel, Germany

During 2022, a new aromatic industrial by-product stream from the petrochemical industry was identified as being suitable for the production of hybrid pitches for the steel and aluminum industry as well as for the production of PETRORES® and LiONCOAT® products and significantly broadened the platform of petroleum-based raw material feedstocks.

Our R&D teams have begun to investigate the availability of monomers from sustainable sources that could be used as building blocks for the synthesis of hydrocarbon resins. These sustainable sources either can be from recycled plastics or renewable/bio-based materials. The investigation will create the knowledge base required to develop new resin products, if justified by economic and ecological aspects, as well as the availability of raw materials. As the availability of these monomers gradually increases, we should be able to expand our portfolio of sustainable industrial resin products and satisfy the growing customer demand for them.

The carbon calcination business has developed laboratory and pilot-scale tests to assess and evaluate alternative feedstocks for the suitability of its processes. We make extensive use of our sophisticated pilot anode-preparation and test facility at the R&D Competence Center Carbon Technology in Castrop-Rauxel, Germany. The work in this area requires a collaborative effort between our calcination and distillation businesses, since CPC aggregate fractions are prepared in the US lab, and the pilot anodes are prepared and tested in Castrop-Rauxel.

GRI 3–3

Stefan Knau

Vice President Resins & Modifiers

»Sustainable materials play an important role in the reduction of product carbon footprints and are strongly requested by our customers. In response, our Advanced Materials group has initiated a dedicated bio-based product R&D program.«

In 2022, this testing was used to establish the performance of Rain Carbon's new shaft-calciner product from Atchutapuram, India, and work is currently underway to prepare and test pilot anodes with the company's proprietary anhydrous carbon pellets produced in the large-scale production campaign in October 2023.

Pilot anode testing is used to evaluate new raw material sources for aluminum-anode applications. In 2022, the calcination business successfully introduced several new GPC sources. One of these was located very close to one of our existing calciners which helps reduce supply chain related CO_2 emissions. We also worked closely with the refinery supplier to improve the quality, and it has now become an important anode-grade GPC source for us.

Evaluation and Outlook

Both the Carbon and Advanced Materials segments are constantly looking for alternative feedstocks, and they share their progress in identifying and evaluating them during business meetings as well as implementing them into the industrial processes in the frame of process-development projects.

Since 2021, our business segments have been assessing their share of raw materials that are by-products and which are being upcycled during calcination, distillation and other processes. In the carbon distillation and advanced materials business, the primary raw material feedstock is coal tar, which is a by-product from the transition of coal into metallurgical coke in steel production. The business also relies on petroleum tar and other aromatic raw material feedstocks being by-products from refineries and other petrochemical industries. Another starting material for our industrial processes is crude benzene, a by-product from the coking process of coal. The share of raw materials that are industrial by-products used by the carbon distillation and advanced materials business is more than 95% in total.

We are convinced that a selection of purely aromatic raw material streams is not sufficient to satisfy future demand. In addition, the ability to transform raw materials that up to now could not be processed in the manufacture of our products into suitable raw materials by thermal or chemical treatments will be crucial. The identification and potential conversion of new aromatic raw material streams for our carbon distillation processes and the manufacture of thermoplastic carbon precursors used for coating, binding and impregnation materials on the basis of carbon is essential for our future business and therefore represents a substantial part of our R&D initiatives.

In the calcination business, 100% of our raw materials are industrial by-products: primarily green petroleum cokes, including delayed-sponge and shot coke, as well as fluid coke, all of which are by-products of petroleum refineries.

5
Social

Our R&D team in Castrop-Rauxel, Germany.

We have a responsibility to our employees to ensure a safe working environment and that they feel valued. They are the main driver of our business success. Since our operations involve hazardous materials and other chemical substances, protecting the health and safety of people along our value chain is of the utmost importance to us. By treating our employees fairly, fostering their personal development and giving them opportunities to develop the skills they need to ascend in the company through well-organized succession planning, we not only increase their well-being but also the resilience of our company. A healthy workforce is at the core of each successful organization.

We are committed to meeting stringent local, regional, national and global standards. Our health- and safety-management system helps to create a safe workplace and prevent employee work-related injuries and incidents. By ensuring the safe operation of our plants, we are also protecting the health and safety of employees, visitors and neighboring communities. In addition, we are responsible for protecting the health and safety of all users of our products, including the employees of our customers. By providing updated and adequate safety information for our products, we are doing our part to create safer workplaces for our customers.

With approximately 1,660 employees across six countries, Rain Carbon is an important global employer in the fields of carbon calcination/distillation and advanced materials. By offering fair and progressive working conditions, which provide equal opportunities and treatment, we aim to retain existing employees while attracting new qualified talent within a competitive labor market. Our positively perceived leadership and corporate culture of recognition promotes employee satisfaction and commitment, which results in low staff turnover. This, in turn, positions us as a company of choice for existing and potential future employees, as well as for current and potential future investors. Employee well-being, work-life balance, corporate benefits and the opportunity for personal and professional growth, development and advancement are important for our existing and potential employees, as well as for the ongoing strength of our organization. To address demographic changes and to ensure we have the talent required for our special production processes, internal succession planning plays an important role in avoiding the loss of knowledge that is crucial to our business.

By providing career-development opportunities, we retain our workforce and secure the future of our business. Enhancing the knowledge and skills of our workers through strategic employee development not only contributes to achieving our strategic goals; it also benefits our local communities and economies.

GRI 3–3

Our wide-ranging CSR activities include corporate donations and employee volunteerism to construct Habitat for Humanity homes for low-income members of our communities.

As an international company, our day-to-day work is shaped by diversity, which is also essential to the company's values. The diversity of professions, cultural perspectives, biographical backgrounds, life experiences and competencies promotes innovative thinking and a positive culture of communication. This can lead to innovative and sustainable solutions when dealing with challenges. Employees, as well as unions, regulatory authorities, investors and job applicants expect management to treat our workforce fairly and in compliance with national and international laws and regulations.

Corporate Citizenship

Our commitments also include a strong focus on corporate social responsibility (CSR) and enhancing the quality of life in the communities where we operate. For example, our Pragnya Priya Foundation in India operates several hospitals in remote regions of where no other medical facilities are available within a 20-mile radius. These medical centers are equipped with test laboratories and other specialized equipment, and each year the hospitals provide treatment to upwards of 70,000 patients.We also believe that education is a crucial factor in enabling individuals to reach their full potential. Through our Pragnya Priya Foundation, we operate three schools in rural India. In the US, many of our CSR-related activities support STEM (science, technology, engineering and math) education, while in Europe our RÜTGERS Foundation strives to make science, technology and computer science lessons tangible and interesting for pre-college students. In addition, in North America much of our activity involves the hands-on work of our employees stocking local foodbank shelves, serving as volunteer coaches and working with Habitat for Humanity to build homes for low-income members of our communities. Our employees are similarly generous with their financial contributions. Their contributions support a range of initiatives for those in need in our local communities, and during the past two decades they have contributed approximately US$ 1.4 million to their local United Way chapters.

GRI 3-3

5.1 Safe Operations & Employee Health

SUSTAINABLE DEVELOPMENT GOALS

3 GOOD HEALTH AND WELL-BEING

SDG 3 Good Health and Well-Being (sub-target 3.9):

Safety and health are of central importance to us during manufacturing and the downstream use of our products. In 2018, we launched our Quest for Zero initiative to help us become an incident-free company. We also promote a healthy and active lifestyle within Rain Carbon via regular health check-ups for employees as well as occupational health- and safety-management systems, including continuous-improvement activities in the workplace focused on safety, such as toolbox talks.

Material Topic
Health & Safety

Safe Operations & Employee Health

Ambitions

- We aim to become an incident-free organization by implementing the Quest for Zero initiative.
- We aim to increase leader involvement in health and safety topics.
- We aim to promote a healthy lifestyle and protect the well-being of employees.

Targets

- We will develop and implement our in-house program "see it, fix it, report it" by 2024.
- We will complete the implementation of the Life-Saving Rules (nine in total) by 2024.
- We will develop a globally standardized safety- and health-management system by 2025.
- We will conduct a minimum of six safety walkthroughs per leader annually by 2024.

Our Ambition

Our highest priority is the health and safety of our employees, contractors, visitors, and customers, as well as plant and product safety. Due to the nature of the materials we work with, we are aware of our high level of responsibility and have implemented a comprehensive safety-management system globally. It is our goal to prevent and eliminate any injuries, occupational illnesses and unsafe practices in our workplaces. Our highest priority, therefore, is to protect the health and safety of all who are part of our operations, live in the communities where we operate or use our products.

Our Management Approach

Providing a safe workplace for our employees

On an organizational level, Rain Carbon has implemented a hierarchy of global and local responsibilities. Site management and the local safety, health, and environment (SH&E) teams are responsible for workplace safety and technical compliance for each site.

GRI 3–3, 403–1

They are also responsible for implementing and upholding compliance with the Global SH&E Policy. The global SH&E team supports the operations teams. Current developments regarding health and safety, including changing regulatory requirements, are also tracked by this group. Joint health and safety meetings are conducted quarterly with SH&E representatives, site management, and site personnel to discuss SH&E in detail. This detailed discussion addresses past SH&E performance, recent changes at the federal and company level, and future happenings that could affect SH&E. In addition, meetings are conducted with SH&E, site management, and the corporate management on a monthly basis.

At Rain Carbon, every employee is responsible for supporting our workplace-safety initiatives and ensuring that we are in compliance on all safety-related matters. This focus includes reporting incidents, accident prevention and maintaining and/or repairing equipment so it meets safety standards to help ensure employee protection.

In addition to adhering to local and regional requirements, all of our global sites have implemented key Occupational Safety and Health Administration (OSHA) 29 CFR requirements, such as incident reporting to remain consistent across our global SH&E function. Our sites in Germany, Belgium and Canada have also implemented a certified ISO 45001 system.

We have several policies in place regarding employee and plant safety. Through our Global SH&E Policy (see chapter 3. Environment), we are committed to eliminating unsafe practices and establishing systematic approaches to fulfill our commitments and achieve compliance. In addition to our global SH&E Policy, we have local SH&E policies that are adapted to address specific on-site conditions. We also have a policy on Global Process-Safety Management and have established Life-Saving Rules and other initiatives using real-time data and scenarios from our working conditions to give our employees guidance on creating and maintaining a safe working environment.

Brandon Cox

Vice President Global SH&E

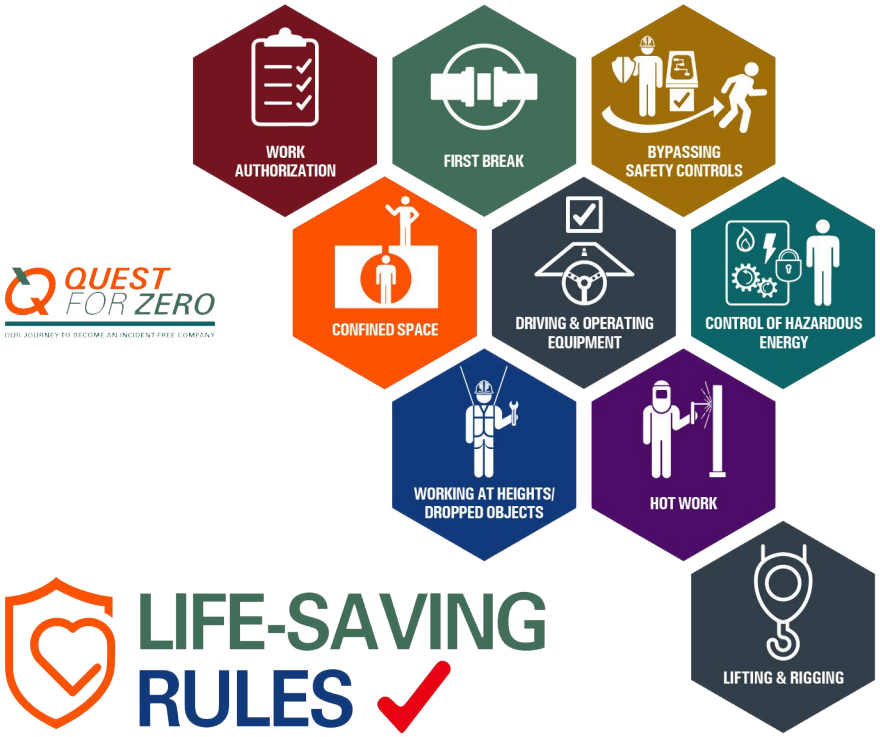
»We have made tremendous progress with our safety culture, and as a result we have significantly reduced the number of injuries and accidents. We are committed to enhancing our safety culture and awareness so that we continue to protect the health and wellbeing of our employees and surrounding communities.«

GRI 3–3, 403–1, 403–2

A global Incident-Reporting Guideline supports the communication, investigation and tracking of incidents and injuries to completion. This supports root-cause analysis and the establishment of corrective actions to prevent dangerous situations from recurring.

At the site level, management performs regular SH&E walkthroughs, and we have a tracking system for unsafe actions/unsafe conditions. Once an incident occurs, an incident investigation is immediately conducted by a site SH&E professional. Depending on the severity of the incident, it is either captured in the tracking system or further discussed in a Lessons-Learned Action Team meeting. A final lessons-learned report summarizes the accident, its root cause, measures taken and lessons learned. The report is made available to all Rain Carbon sites afterward.

All of our employees take part in regular health-and-safety training in accordance with national and local standards. All policies are made available to our employees. After a policy, directive or guideline is revised, additional training is performed to inform employees about the changes. The training sessions are either conducted via the company's online learning-management system or on-site by a site SH&E professional. We encourage our employees to actively participate in discussions on health and safety to inform our processes and guidelines. We promote a culture in which employees are encouraged to take action to avoid and report any unsafe incidents or conditions. In the United States, for example, employees are rewarded when reporting any unsafe actions or conditions through an incentive program. We protect our employees from internal or external retaliation as stated in the OHSA whistleblower standard.



We offer site-specific employee health benefits including insurance, annual medical check-ups and other related benefits. For example, at our US sites, we offer incentives for an annual wellness exam.

GRI 3–3, 403–2, 403–3, 403–4, 403–5, 403–6

Additionally, employees and their family dependents have free access to an Employee Assistant Program, which offers legal and financial advice and up to six mental-health sessions.

For our visitors, we have implemented a contractor/visitor-orientation training program. Every external person must adhere to the same requirements as our own employees. These sessions inform our visitors about our company's safety requirements and provide them with an understanding of potential safety hazards at our sites. We also require contractors, vendors and visitors to provide safety information and maintain and show proof of federal safety and health compliance before entering a Rain Carbon site.

Taking product stewardship seriously

Manufacturing, importing, supplying, and handling of chemicals involves economic, environmental, and personal risks for the company, its employees, and third parties involved.

Different legislations (international, national, or regional) are in place to manage the risks that occur when a hazardous product is traded, and Rain Carbon is committed to comply with them. The Global Hazardous Substance Management team is responsible for the strategic and conceptual planning as well as coordinating the worldwide implementation of the regulatory requirements regarding information on hazards and safe handling of our products. Chemical regulatory compliance and hazard communication are managed by the Global Regulatory Compliance and the Global Hazardous Substance Management groups in tandem. Both are organized and centrally managed within the Global Regulatory Affairs and Sustainability department.

Additionally, we have established the function of Product Stewards. The role of the Product Steward is to ensure efficient and timely information flow between the departments, particularly Regulatory Affairs, Product & Technology, Commercial, and Research & Development. Rain Carbon provides safety data sheets (SDSs) and product labels, compliant with all relevant laws and regulations, to customers and other downstream users.

The main tools for hazard communication are being standardized under the United Nations Globally Harmonized System of Classification and Labelling of Chemicals and implemented into safety data sheets and product labels progressively in different jurisdictions/countries worldwide. These documents provide the most relevant information for the safety of workers, consumers, and environment considering the national, regional, and internal legal requirements for chemicals in Rain Carbon's target markets from manufacturing, transport, and storage of our products.

In certain countries, the SDS and/or product label should be submitted to the competent authority before entry of the product into the market. The information provided by the SDS and product label is very important to ensure the safe use of our products by our customers and product compliance in the delivery countries.

Rain Carbon's Life-Saving Rules

In order to maintain our high level of safety performance, global SH&E initiated the Rain Carbon Life-Saving Rules (LSR) campaign in January 2021. The campaign includes nine LSRs that we view as the most important for employee safety and that are being implemented over a three-year period. The global SH&E team has minimum directives for implementation at each site. Each site has been given four months to meet these minimum requirements related to each rule and train all employees on the new procedures and to purchase any equipment, as needed, to begin implementation. For the first three rules (Control of Hazardous Energy, Work Authorization and Confined Space), directives, training, site-walkthroughs and local guidelines were fully developed and integrated. The fourth rule, First Break, was fully integrated in December 2022.

Rain Carbon's workers and employees are granted access to the SDSs in relation to substances or mixtures that they use or may be exposed to in their work. SDSs and product labels need to be updated according to the revision of the chemical legislation. SDSs provides relevant information to create further required documents for workplace safety and transportation of dangerous goods. The Global Hazardous Substance Management group continuously provides information on components and hazardous products to local workplace safety and environmental experts and authorities, as well as to external service providers such as global emergency hotlines, in case of an incident with our products.

As the global regulatory landscape is continuously evolving, we are constantly improving our management systems accordingly. We have implemented a monitoring system to follow regulatory trends, as well as upcoming new chemical regulations and standards. As one of the most advanced jurisdictions regarding chemical safety, the European Union requires compliance with its Regulation on the Registration, Evaluation and Authorization of Chemicals (REACH). This regulation demands proper registration of substances and the provision of accurate safety information.

President's Safety Excellence Award

In recognition of our production facilities that have gone one year or more without a recordable injury, we launched the President's Safety Excellence Award in 2021. In 2022, 10 Rain Carbon production facilities were recognised for their outstanding safety performance.

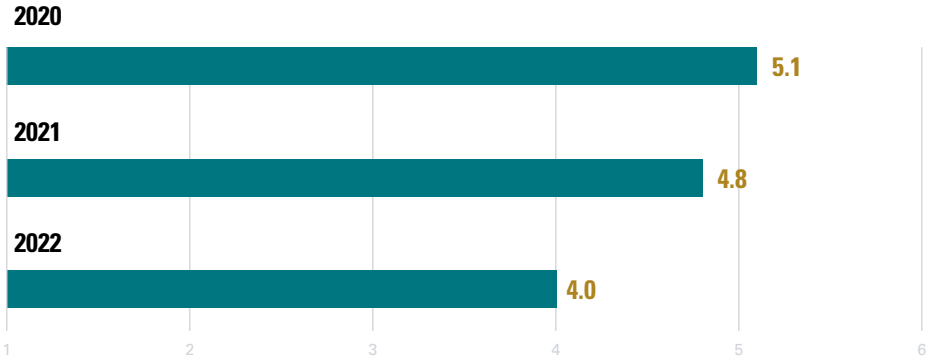
Our President's Safety Excellence Award winners 2022

No. of consecutive years without a recordable incident	Award	Facility
10+ years	Platinum Medal	Purvis, USA
5–10 years	Gold Medal	Visakhapatnam, India
3–5 years	Silver Medal	Atchutapuram, India Duisburg, Germany Gramercy, USA Hamilton, Canada Kędzierzyn-Koźle, Poland Robinson, USA
1–3 years	Bronze Medal	Lake Charles, USA Norco, USA

GRI 3–3, 403–7

First-aid injury rate

per 200,000 working hours



Key Measures and Actions

After launching our Quest for Zero initiative in 2018, which supports our aim to become an incident-free organization, we began introducing organization-wide training and awareness-building measures in 2019. The aim of the initiative is to develop a culture in which employees are encouraged to adopt safety as a behavior in all aspects of their lives. Employees should be able to recognize unsafe situations and feel empowered to proactively act and implement preventive measures to avoid incidents. In addition, we worked with DuPont Sustainable Solutions on several initiatives to enhance operational safety and optimize our expertise and processes.

Rain Carbon has developed the Safety-First 2.0 initiative that began in May 2022 to understand where we stand with regard to occupational safety and what issues we must focus on to improve the most. The Safety-First 2.0 initiative implemented detailed practices for increased management involvement at the site level, increased meetings with our contractors and visitors to discuss SH&E, management-of-change improvements, and increased SH&E training at all of our sites (e.g., annual hazard-identification training and global post-incident refresher training).

In a cooperative approach, the Legal and the Regulatory Affairs & Sustainability management teams are currently implementing a global monitoring system to follow regulatory trends, as well as potential and emerging chemical regulations and compliance standards. This includes the development of the Global Regulatory Compliance team, as well as the development of tools, such as a legal register and regulatory status and concern tables.

In another initiative, the global Hazardous Substance Management team is developing a concept to continuously integrate data and a centralized approach to hazard communication. We are developing a software-based global hub for hazardous-substance management with the core team based in Germany and India. Next steps will be the roll-out to other carbon distillation and advanced materials production sites in Poland, Canada, and Belgium. This tool supports the implementation of a centralized approach for the group-wide management of SDSs, as well as label preparation and updating.

Evaluation and Outlook

To measure our performance, we have established performance indicators globally as well as at the site level. The indicators per site are reported monthly in a performance-indicator system, then communicated to all sites. If necessary, follow-up meetings are held to improve performance. This performance review allows us to track positive and negative developments. In line with our commitment to continuous improvement, we look for optimization potential and set internal site-specific targets each year. We have increased the focus on recordable injuries and first-aid cases to further prevent fatalities and other serious incidents.

GRI 3–3, 403–4, 403–5

Compared to 2021, our annual first-aid injury rate went down in 2022 from 4.8 to 4.0. For the third consecutive year, our annual total recordable incident rate (TRIR) was less than 0.2. This demonstrates that, even though we faced an exceptional situation with the COVID-19 pandemic, our health-and-safety management system is robust and effective.

We plan to implement three additional Life-Saving Rules in 2023. We are on schedule to implement the next Life-Saving Rule, Driving and Operating Equipment, by April 2023.

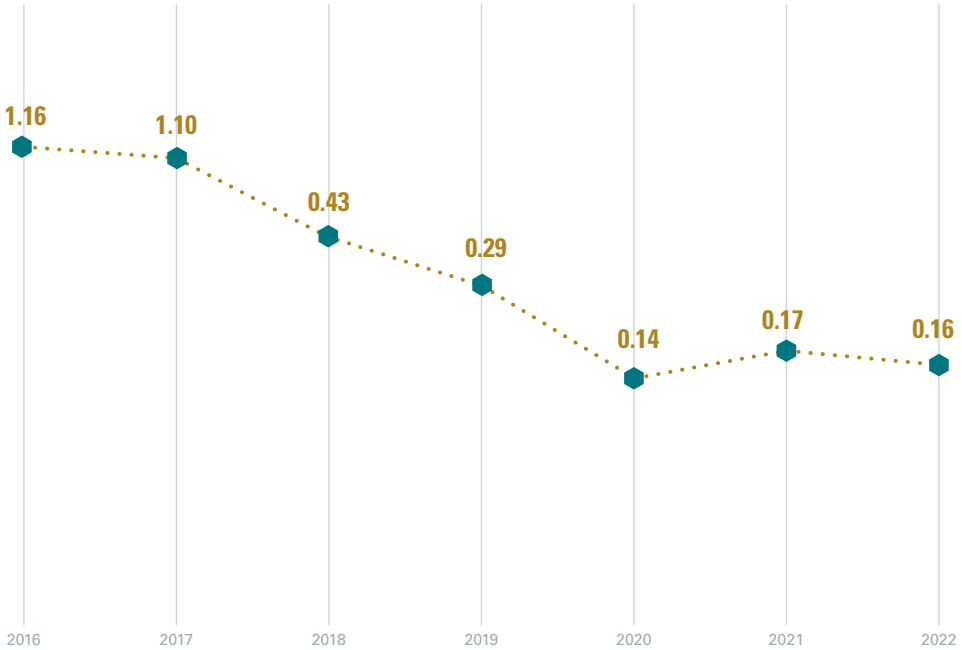
As part of our Safety-First 2.0 initiative, we fully implemented the SH&E management walkthroughs, post-incident refreshers, hazard-identification training, and semi-annual contractor meetings in 2022. For 2023, we plan to fully roll out a management-of-change app, which is in testing phase at this time at a few sites. Our focus is on developing a more effective app, including software to track key items discussed during our semi-annual SH&E meetings and a card system for the walkthroughs.

As Rain Carbon is fully committed to the Cefic initiative, which aims to improve the quality of safety-relevant data necessary for REACH, we annually update several registration dossiers for our products, proactively. In 2022, our Rain Carbon Germany GmbH, Rain Carbon BV and Rain Carbon Poland subsidiaries updated 19% of all active registration dossiers.

We will continuously develop our management system, improve our processes and update our safety information as we strive to eliminate workplace incidents and injuries.

Total recordable incident rate

per 200,000 working hours



GRI 3–3, 403–9

5.2 Employee Empowerment and Continuity

SUSTAINABLE DEVELOPMENT GOALS

SDG 8 Decent Work and Economic Growth (sub-target 8.4):

We take our responsibility of providing safe and ethical working conditions across our global footprint seriously. We have family-friendly working-time models such as mobile-working policies. Our people at different sites participate in works councils, collective agreements on remuneration, and multiple programs and activities focusing on workplace safety.

Material Topic
Organizational Resilience

Employee Empowerment and Continuity (Succession Planning)

Ambitions

- We aim to identify critical functions for which proactive succession planning is required to ensure continuous business operations. These functions and potential successors are documented, and potential successors are prepared to take over within 6–12 months.

Targets

- We will identify critical functions, and define processes for succession planning by the first half of 2024.
- We will designate and document potential successors for 90% of the identified functions by 2024.
- We will prepare 80% of the designated successors to take over within 6–12 months by 2026.

Employee Empowerment and Continuity (Digital Competence)

Ambitions

- We aim to identify and document the required digital competencies for all functions. Potential gaps are evaluated regularly and addressed through respective trainings.

Targets

- We will construct a matrix containing all functions and required digital competencies in the target state by 2024.
- We will evaluate the current state regarding digital competence and identify gaps by the first quarter of 2025.
- We will close 80% of all gaps through trainings by 2026.
- We will re-evaluate the digital competence by the first quarter of 2027.

Our Ambition

For us, organizational resilience is achieved through offering fair and progressive working conditions and builds on a diverse and well-trained workforce. To foster our organizational resilience, we aim to empower our employees and ensure they are able to meet the challenges of changing requirements they face in their everyday work.

Our Management Approach

Employee development

Our approach for onboarding and exit management are described in our various HR policies, which are applied globally. To attract talent and retain our existing workforce, we offer benefits such as insurance, food subsidies, company pensions, health management, parental-leave options and flexible working arrangements. These benefits are country-specific.

Our International Training & Development Policy describes our approach toward training and development of all employees. We aim to promote a recognition culture across all our sites, and we have established a globally standardized performance-evaluation system, including annual feedback talks on performance and further employee development. Our training-and-development measures are based on the results of the performance-evaluation discussion, legal requirements, risk assessments and future job requirements. A company-wide learning-management system standardizes and digitizes administration, documentation, tracking and reporting of learning-and-development and training programs for employees.

We have implemented the following Leadership Principles, which apply to all supervisors globally:

- Serve as role models for maintaining standards of occupational safety, ethics and integrity
- Engage in dialogue with your teams and encourage cooperation across Rain Carbon
- Show faith in the abilities and judgement of your team
- Support and develop your team with a view to meeting both the current and future needs of Rain Carbon
- Communicate in a constructive manner and foster a collegial work environment
- Look toward the future and encourage a willingness to embrace change

We have implemented global and regional leadership-development programs to support our leaders and help them live up to our principles. Additionally, these programs support succession planning at the earliest stage possible for critical leadership positions. We support our future and current leaders and actual leaders by developing their management behavior, leadership style and competence, as well as by promoting networking opportunities across functions globally.

In the United States, Germany, Belgium and Canada, remuneration for 50% of our employees is covered by collective-bargaining agreements.

GRI 2–30, 3–3

A diverse and well-trained global workforce plays a crucial role in our becoming a respected industry leader.

We believe that giving young people insight into everyday working life brings mutual benefits. Our vocational-training program in Germany allows young people to broaden their knowledge about our company and help them make decisions about their future careers based on their experience, while we lay the foundation for employing well-trained specialists in the future. In Germany, participants of our vocational-training program account for more than 10% of our local workforce.

Diversity and Equal Rights

We work to ensure diversity and equal rights, such as equal-employment opportunities and anti-harassment in our global company Code of Business Conduct & Ethics, which was issued by the global Legal department.

The global Human Resources (HR) team is responsible for the overall training related to global policies such as our business-conduct rules, and international training and development. The local HR teams are in charge of providing specific training, such as anti-harassment training.

Equal rights are managed and ensured in all of our HR processes, such as recruitment and hiring, as well as in personnel development and employee retainment.

Recruitment and Hiring
Our recruitment and hiring process, as defined in the Rain Carbon Group International Recruiting Policy, applies to all countries to assure high global standards. Our global and local HR teams are responsible for implementing this policy. Job advertisements are published gender-neutral, and an interview-evaluation summary form ensures that we recruit the best qualified person for each job based on the defined requirements and skillsets of the candidates. All employees in the HR department are trained and have experience regarding equal rights to ensure that the recruitment and hiring process is free from any discrimination.

Employee Retention
The Rain Carbon Group International Compensation & Benefits Policy describes our approach to attract, motivate and retain employees. While both our global and local HR teams are responsible for implementing this policy, our local HR teams are responsible for monitoring and for keeping a close eye on equal-rights topics.

Rain Carbon's Code of Business Conduct and Ethics

"Rain Carbon provides equal employment opportunities, in conformance with all applicable laws and regulations, to all employees and applicants based on qualification and merit, as well as the business needs of Rain Carbon. Rain Carbon administers its personnel policies, programs, and practices in a nondiscriminatory manner in all aspects of the employment relationship, including recruitment, hiring, work assignments, promotion, termination and wage and salary administration". […] "It is the policy of Rain Carbon to prohibit any form of harassment in any Rain Carbon workplace. Forms of harassment include, but are not limited to, unwelcome verbal or physical advances and sexually, racially or otherwise derogatory or discriminatory materials, statements or remarks."

Equal pay is ensured by our competency and performance-based compensation system. The performance evaluation is conducted by a trained superior and is based on standardized criteria such as position-related level of knowledge, problem-solving competency and accountability. To determine salary ranges, we regularly review job profiles in accordance with remuneration benchmark data from Korn/Ferry/HAY, a company specializing in job-evaluation systems. For annual salary-increase budgets, we consider inflation, the projection of salary increases and the Korn/Ferry/HAY benchmark data. For employees who are not under a collective-bargaining agreement, we pay market- and competency-based salaries that consider wages in the local labor market.

To ensure equal career-advancement opportunities, we promote the best qualified employee based on defined job requirements and the skills of the candidate. All open positions are also published internally. Through our engagement with the RÜTGERS Foundation in Europe, we aim to increase the interest in natural science for pre-college students across all genders.

Key Measures and Actions

At the end of 2021, we conducted our first-ever employee-satisfaction and -engagement survey, in which 595 employees participated. Given the many changes in our organization in recent years, as well as in the way we now work due to the pandemic, we wanted to hear employee feedback and understand satisfaction levels on a range of topics to identify opportunities for improvement.

The results of the survey were communicated to our employees. The overall satisfaction was rated 2.94 (on a scale of 1 being very satisfied, 3 okay and 5 very dissatisfied). The criteria of Work Environment, Relationship with Colleagues and Leadership were rated positively by the employees globally. We see opportunities for improvement in the areas Communication, Organization & Structure and Corporate Culture.

A global action plan was approved by the executive team, an management teams were asked to develop an action plan for key country-specific areas for improvement.

As shown in the results, our employees are most satisfied with the Relationship with Colleagues and the Work Environment. In their opinion, the weakest topics are the Corporate Culture and the Organization & Structure. We take these results seriously and are working on solutions to improve the satisfaction of our employees.

After travelling was possible again, we relaunched our Global Leadership-Development Program and our regional leadership development programs in North America, Europe and India in 2022. These programs are essential to develop our existing and future leaders and to ensure a common leadership understanding based on our leadership principles.

Learning and development is important to stay up to date and to handle the challenges of today and in the future. We increased the utilization of our learning-management system and the number of courses. As we entered 2023, we implemented the use of SuccessFactors Performance and Goals for our annual-performance and personnel-development discussions. The implemen-tation is an important step in digitalizing our HR processes.

In 2022, we updated our Code of Business Conduct & Ethics. Although we already adhere to many standards of international labor organization, we wanted to make explicit to our employees that all of them must comply with these rules. So we added to the Code of Business Conduct & Ethics that we do business to full compliance with the UN's Universal Declaration of Human Rights and the International Labor Organization's fundamental conventions concerning rights at work (i.e., numbers 29, 87, 98, 100, 105, 111, 138 and 182). Rain Carbon also rejects any form of child or forced labor, related to how we conduct our business as well as our interactions with suppliers and service providers.

Employee Satisfaction

GRI 2–23, 3–3

The membership of Rain Carbon personnel in labor unions and similar organizations does not lead to any disadvantage at Rain Carbon.

To ensure that all employees are aware of the updated Code of Business Conduct & Ethics, they were required to confirm that they read and understood the Code, using our learning-management system.

The high inflation globally was a challenge for all our employees in 2022. To retain our workforce and to stay an attractive employer, the company decided to make a discretionary one-time payment to all employees who were not entitled to an extra payment due to collective-bargaining agreement or received statutory salary increases based on indexation.

The utilization of our recruiting software was increased due to training of new employees and refresher training for existing employees. This helps us to ensure a very good candidate experience during the recruiting process.

Work from home has become a standard for many employees who do not need to be at our sites every day. To meet the expectation of our current and future workforce and to have the possibility to hire candidates who do not live near our sites we implemented a flexible international remote-working policy. This policy ensures a better work-life balance, reduces fuel consumption related to driving to and from work, and helps to attract and retain talented employees.

In order to avoid conflicting targets and developments, we only set team targets instead of individual targets. This leads to more focus on the success of the company as a whole.

Evaluation and Outlook

There have not been any significant changes in the diversity structure of our governance bodies and workforce for 2022 or in recent years. As a company within the chemical industry, we have a higher share of male employees due to a higher share of male applicants. Following the high standards of our HR policies, our approach is to hire and develop the best candidates for the job, providing equal opportunities without any form of discrimination. 63% of our employees have received a regular performance and career-development review. And in 2022 we achieved nearly two hours of training more per employee (15.9 h), which shows the success of our contentious engagement to increase the competences of our employees.

Daniel Kläs

Global Human Resources Manager

»As part of our organizational improvement efforts, developing a culture that embraces positive and constructive feedback is one of our priorities.«

GRI 2–23, 2–24, 3–3, 404–1, 404–3

6
Data & Performance

6.1 Environment

Indicator	Unit	2022	2021
Total GHG (Scope 1+2) GHG emission[2]	metric tons CO_2-equivalent	1,222,641	1,396,590
... direct (Scope 1) GHG emissions[2]	metric tons CO_2-equivalent	1,180,605	1,355,088
... indirect (Scope 2) GHG emissions[3]	metric tons CO_2-equivalent	42,036	41,502
Total GHG intensity (Scope 1+2)	metric tons CO_2-equivalent/metric ton product	0.50	0.50
GHG emissions avoided through waste-heat recovery[4]	metric tons CO_2-equivalent	348,660	430,001
Total energy input	MWh	1,604,398	1,810,079
... primary energy input	MWh	1,155,463	1,309,923
... secondary energy input	MWh	448,935	500,157
Energy intensity	MWh/metric ton product	0.66	0.65
Energy generated from waste-heat recovery[4]	MWh	1,054,167	1,174,424
Total waste generated[5]	metric tons	109,302	133,034
... hazardous waste[5]	metric tons	49,728	29,569
... non-hazardous waste	metric tons	59,574	103,465

[1] Data from our production site in Atchutapuram that started operations during 2022 is not included in order to avoid distortion of the aggregated data.

[2] Includes CO_2, CH_4 and N_2O emissions from all sites. Emissions from waste-gas combustion at Duisburg are not included.

[3] GHG emissions from the purchased electricity are calculated utilizing location based emission factors in t CO_2 equivalent per kWh, exept for our Indian operations where the emission factor is only available in t CO_2 per kWh.

[4] Based on electricity and steam generation in Castrop-Rauxel, Chalmette, Duisburg, Hamilton, Lake Charles, Norco, Visakhapatnam and Zelzate. Avoided emissions are calculated based on the emissions of the energy source that would otherwise be used to supply the amount of energy if our waste-heat recovery system was not in place. In case of electricity production, we use the emission factor of the local power grid, and in the case of sold steam, we use the emission factor of the plant that would have generated the steam in the steam network.

[5] Hazardous waste is not assessed in Robinson.

Indicator	Unit	2022	2021
Total water consumption[6]	cubic meters	3,414,380	–
... water withdrawal	cubic meters	8,361,096	–
... water discharge	cubic meters	4,946,716	–
Absolute emissions of nitrogen oxides (NO_x)[7]	metric tons	989	1,096
Emissions intensity of nitrogen oxides (NO_x)[7]	kg/metric ton product	0.59	0.65
Absolute emissions of sulfur oxides (SO_x)[8]	metric tons	13,125	15,226
Emissions intensity of sulfur oxides (SO_x)[8]	kg/metric ton product	6.6	7.0

[6] Water withdrawal comprises the water taken from surface waterbodies (fresh and saltwater), groundwater aquifers or from thirdparty suppliers. However, the discharge additionally comprises the sources storm- and rainwater. Therefore, water consumption calculated from withdrawal minus discharge is not a representative value for our operations.

[7] Data available for all applicable sites, except Castrop-Rauxel, Kędzierzyn-Koźle and Visakhapatnam.

[8] Data available for all applicable sites, except Castrop-Rauxel and Kędzierzyn-Koźle.

6.2 Products

Indicator	Unit	2022	2021
Share of raw materials that are by-products ("upcycled") in Rain Carbon's operations	%	>98%	>98%
Share of raw materials that are by-products ("upcycled") in carbon segment	%	100	100
Total R&D expenses (OPEX) as share from revenue	%	0.44	0.61
Share of sales with products developed in the past five years for the Carbon Distillation and Advanced Materials businesses	%	3.54	1.87
Share of sales with products developed in the past five years for the Carbon Calcination business	%	0	0

6.3 Social

Indicator	Unit	2022	2021
Employees receiving regular performance and career-development reviews	%	63	90
Average hours of training per year per employee (total)	hours	15.8	13.8
... male	hours	16.0	14.1
... female	hours	14.8	11.3
In Belgium	hours	12.3	12.7
... male	hours	12.1	13.3
... female	hours	14.3	7.5
In Canada	hours	18.3	22.5
... male	hours	20.1	21.9
... female	hours	8.7	25.2
In Germany	hours	21.2	17.6
... male	hours	21.8	18.6
... female	hours	18.4	12.9
In India	hours	12.0	7.8
... male	hours	12.0	7.8
... female	hours	0.0	0.0
In Poland	hours	17.6	14.5
... male	hours	21.7	21.0
... female	hours	9.7	2.3

Indicator	Unit	2022	2021
In the United States	hours	10.0	11.2
... male	hours	10.2	11.2
... female	hours	8.8	6.4
Total number of employees	#	1,661	1,569
... male	#	1,467	1,455
... female	#	194	215
... in Belgium	#	187	187
... in Canada	#	92	85
... in Germany	#	650	629
... in India	#	456	408
... in Poland	#	31	30
... in the United States	#	245	230
Percentage of total employees	%	100	100
... male	%	88	87
... female	%	12	13

Indicator	Unit	2022	2021
... age <30	%	17	16
... age 30-50	%	48	48
... age >50	%	35	36
Employees directly reporting to executive team	#	26	47
... male	#	22	36
... female	#	4	11
... <30	#	0	0
... 30–50	#	11	22
... >50	#	15	17
Executive team	#	7	7
... male	#	7	7
... female	#	0	0
... age <30	#	0	0
... age 30-50	#	2	4
... age >50	#	5	3
Total number of permanent male employees	#	1,398	1,352
... in Belgium	#	167	167
... in Canada	#	74	69
... in Germany	#	496	506

Indicator	Unit	2022	2021
... in India	#	440	407
... in Poland	#	17	20
... in the United States	#	204	193
Total number of temporary male employees (FTE)	#	69	16
... in Belgium	#	0	0
... in Canada	#	5	1
... in Germany	#	46	15
... in India	#	15	0
... in Poland	#	2	0
... in the United States	#	1	0
Total number of full-time male employees	#	1,443	1,352
... in Belgium	#	149	149
... in Canada	#	75	70
... in Germany	#	531	513
... in India	#	455	407

Indicator	Unit	2022	2021
... in Poland	#	19	20
... in the United States	#	204	193
Total number of part-time male employees	#	34	26
... in Belgium	#	18	18
... in Canada	#	4	0
... in Germany	#	11	8
... in India	#	0	0
... in Poland	#	0	0
... in the United States	#	1	0
Total number of permanent female employees	#	186	186
... in Belgium	#	20	20
... in Canada	#	13	15
... in Germany	#	101	105
... in India	#	1	1
... in Poland	#	12	10
... in the United States	#	39	35

Indicator	Unit	2022	2021
Total number of temporary female employees	#	7	5
... in Belgium	#	0	0
... in Canada	#	0	0
... in Germany	#	7	3
... in India	#	0	0
... in Poland	#	0	0
... in the United States	#	1	2
Total number of full-time female employees	#	170	165
... in Belgium	#	16	15
... in Canada	#	13	15
... in Germany	#	90	87
... in India	#	1	1
... in Poland	#	12	10
... in the United States	#	38	37
Total number of part-time female employees	#	24	26
... in Belgium	#	4	5
... in Canada	#	0	0

Indicator	Unit	2022	2021
... in Germany	#	18	21
... in India	#	0	0
... in Poland	#	0	0
... in United States	#	2	0
Total number of workers who are not employees	#	18	29
... in Belgium	#	6	5
... in Canada	#	0	1
... in Germany	#	10	22
... in India	#	0	0
... in Poland	#	0	0
... in the United States	#	2	1
Number of fatalities	#	0	0
Rate of recordable injuries	# recordable injuries per 200,000 working hours	0.16	0.17
Rate of first-aid injuries	# first-aid injuries per 200,000 working hours	4.00	4.84

7 Annex

7.1 Stakeholder Engagement

Investors and Stakeholders	• Conducting analyst meetings • Sharing investor presentations, quarterly financial results • Regularly filing various statutory or informative reports and information with stock exchanges • Issuing press releases
Government/Regulatory Bodies	• Interacting with statutory/regulatory bodies, such as stock exchanges, tax departments, and other government departments as and when required
Vendors/Suppliers	• Conducting vendor meetings • Having procurement policies and a vendor-selection process • Conducting supplier visits and meetings, as well as vendor-review meetings
Customers	• Requesting proposals from customers • Conducting client visits and meetings • Making initial contact and pitches • Addressing client feedback • Building relationship in sales • Identifying emerging client needs
Local Communities	• Conducting site visits and local community meetings • Issuing press releases for organizational awareness • Providing financial support to build and maintain community-based infrastructure in villages, such as roads and community centers • Contributing to local welfare activities such as education • Maintaining schools and hospitals through the Pragnya Priya Foundation in rural Telangana and Andhra Pradesh
Employees	• Offering the Global Leader Development Program, which began in 2017 • Providing the Leading Leaders Program and virtual, personal-development sessions • Discussing performance evaluations on four dimensions – conduct, knowledge, management skills and work results – and agreeing on personal-development goals and activities • Providing employee-assessment training programs for supervisors across our global footprint

7.2 About this report

The 2022 Sustainability Report has been prepared in accordance with the GRI Standards and covers the period January 1 – December 31 2022, which is the same period as for the financial reporting. It has been published on March 31, 2023. Going forward, we will publish our sustainability report on an annual basis. As this is Rain Carbon's first non-financial report, no restatements of information have been necessary. This report has not been externally assured, but the data provided in chapter 6.1 Environment was audited by DQS. The assurance statement can be found in chapter 7.4.

The production of this sustainability report was supported by the external consulting agency ELEVATE.

This report and the presented data cover Rain Carbon Inc. and its producing subsidiaries Rain CII Carbon LLC, Rain CII Carbon (Vizag) Limited, Rain Carbon Canada Inc., Rain Carbon BV, Rain Carbon Germany GmbH and Rain Carbon Poland Sp. z o. o.

For any questions, feedback and suggestions, please contact:

Dr. Rolf Roers,
Vice President Regulatory Affairs & Sustainability or

Alan Chapple,
Director of Corporate Communication and Public Relations at
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7.3 GRI Content Index

Statement of use: Rain Carbon has reported in accordance with the GRI Standards for the period 01 January 2022 to 31 December 2022.

GRI 1 used	GRI 1: Foundation 2021		
GRI Standard	**Disclosure**	**Location**	**Omission and add. information**
General disclosures			
	The organization and its reporting practices		
GRI 2: General Disclosures 2021	2–1 Organizational details	p. 7	
	2–2 Entities included in the organization's sustainability reporting	pp. 7–8	Included are Rain Carbon Inc. and its producing subsidiaries Rain CII Carbon LLC, Rain CII Carbon (Vizag) Limited, Rain Carbon Canada Inc., Rain Carbon BV, Rain Carbon Germany GmbH, and Rain Carbon Poland SP. z o. o.
	2–3 Reporting period, frequency and contact point	p. 103	
	2–4 Restatements of information	p. 103	
	2–5 External assurance	p. 103	
	Activities and workers		
GRI 2: General Disclosures 2021	2–6 Activities, value chain, and other business relationships	pp. 8–12	
	2–7 Employees	pp. 7, 95–100	
	2–8 Workers who are not employees	p. 100	

GRI Standard	Disclosure	Location	Omission and add. information
	Governance		
GRI 2: General Disclosures 2021	2–9 Governance structure and composition	pp. 19–20	
	2–10 Nomination and selection of the highest governance body	p. 19	
	2–11 Chair of the highest governance body	p. 19	
	2–12 Role of the highest governance body in overseeing the management of impacts	pp. 20–21	c: The highest governance body is currently not actively reviewing the effectiveness of the organization's ESG due diligence processes but is informed about significant sustainability impacts of the business activities and the management of these.
	2–13 Delegation of responsibility for managing impacts	p. 20	
	2–14 Role of the highest governance body in sustainability reporting	pp. 14, 20	This report was reviewed and approved by the CEO as a last step in this reporting process.
	2–15 Conflicts of interest	p. 19	
	2–16 Communication of critical concerns		There are no formalized processes how critical concerns are brought to the BoD (non-financial compliance issues) or audit committee (financial compliance issues). The procedure depends on the case. b: Omission because no information available. There is not yet an aggregated view on all critical concerns raised by defined stakeholder categories, except from non-compliances with laws and regulations. We acknowledge the importance of this topics and are working on the implementation of respective processes.
	2–17 Collective knowledge of the highest governance body	p. 21	
	2–18 Evaluation of the performance of the highest governance body	p. 19	b: Omission because no information available. So far, no formalized processes have been developed to evaluate the performance of the Rain Carbon BoD's oversight of the management of Rain Carbon's impacts on the economy, environment and people. A standardized approach for the upcoming reporting years is being discussed.
	2–19 Remuneration policies	p. 19	

GRI Standard	Disclosure	Location	Omission and add. information
	Governance		
	2–20 Process to determine remuneration	p. 20	For the renumeration process of the highest governance body, the views of stakeholders and renumeration consultants are not considered.
	2–21 Annual total compensation ratio		Omission because no information available. There is currently no standardized approach for collecting this indicator in a meaningful way on a global basis. We are working on a collection method and plan to be able to collect this indicator for the next reporting years.
	Strategy, policies and practices		
GRI 2: General Disclosures 2021	2–22 Statement on sustainable development strategy	pp. 4–5	
	2–23 Policy commitments	pp. 18, 22–23, 88–89	c: The Code of Conduct and the other policies mentioned in the text are currently not publicly available, but we are considering their publication in the upcoming years.
	2–24 Embedding policy commitments	pp. 22–23, 89	a: Our suppliers and other business partners are informed about our Code of Conduct.
	2–25 Processes to remediate negative impacts	p. 22	b, c, d, e: Omission because no information available. We do not have a formal process to remediate negative impacts. We provide information on our grievance mechanisms to internal stakeholder through the Escalation and Reporting Policy. We will work on a formalization and communication of this process in the next reporting years.
	2–26 Mechanisms for seeking advice and raising concerns	p. 23	
	2 – 27 Compliance with laws and regulations	pp. 24–25	Omission because no information available. There is currently no consistent definition of this indicator internally. We work on a uniform definition and data collection in the next 3-5 years.
	2 – 28 Membership associations	pp. 24–25	
	Stakeholder engagement		
GRI 2: General Disclosures 2021	2 – 29 Approach to stakeholder engagement	pp. 25, 102	
	2 – 30 Collective bargaining agreements	p. 85	

GRI Standard	Disclosure	Location	Omission and add. information
Material topics			
GRI 3: Material Topics 2021	3 – 1 Process to determine material topics	pp. 14–15	
	3 – 2 List of material topics	p. 15	
GHG Emissions & Energy			
GRI 3: Material Topics 2021	3 – 3 Management of material topics	pp. 27–38	
GRI 305: Emissions 2016	305 – 1 Direct (Scope 1) GHG emissions	pp. 37–38, 91	
	305 – 2 Energy indirect (Scope 2) GHG emissions	pp. 37–38, 91	
Own disclosure	GHG emissions avoided from waste heat recovery	p. 91	
	Energy generated from waste heat recovery	p. 91	
	Energy input	p. 91	
Waste & water			
GRI 3: Material Topics 2021	3 – 3 Management of material topics	pp. 27–29, 39–44	
GRI 306: Waste 2020	306 – 1 Waste generation and significant waste-related impacts	pp. 28–29	
	306 – 2 Management of significant waste-related impacts	pp. 28–29, 40, 42–43	
	306 – 3 Waste generated	pp. 42, 44, 91	

GRI Standard	Disclosure	Location	Omission and add. information
Material topics			
GRI 303: Water and Effluents 2018	303 – 1 Interactions with water as a shared resource	pp. 40–43	
	303 – 2 Management of water discharge-related impacts	pp. 28–29, 40–43	
	303 – 3 Water withdrawal	p. 92	b: omission because no information available: We are currently not tracking the amount of water from areas with water stress, but only of the total sum of water consumed. We will check and introduce this KPI in the next 1 – 2 years.
	303 – 4 Water discharge	p. 92	b: omission because no information available: We are currently not tracking the amount of water discharged in areas with water stress, but only of the total sum of water consumed. We will check and introduce this KPI in the next 1 – 2 years.
Air Emissions (Non-GHG)			
GRI 3: Material Topics 2021	3 – 3 Management of material topics	pp. 27–29, 45–50	
GRI 305: Emissions 2016	305 – 7 Nitrogen oxides (NO_x), sulfur oxides (SO_x), and other significant air emissions	p. 92	
Innovative & Sustainable Product Portfolio			
GRI 3: Material Topics 2021	3 – 3 Management of material topics	pp. 52–66	
Own disclosure	Total R&D expenses (OPEX) as share from revenue	pp. 64, 93	
	Share of sales with products developed in the past five years for carbon distillation and advanced materials	pp. 64, 93	
	Share of sales with products developed in the past five years for carbon calcination	pp. 64, 93	

GRI Standard	Disclosure	Location	Omission and add. information
Material topics			
Circularity of Feedstocks & Products			
GRI 3: Material Topics 2021	3–3 Management of material topics	pp. 52–54, 67–71	
Own disclosure	Share of raw materials that are by-products ("upcycled")	pp. 64, 93	
Health & Safety (incl. Product Stewardship)			
GRI 3: Material Topics 2021	3–3 Management of material topics	pp. 73–82	
GRI 403: Occupational Health and Safety 2018	403–1 Occupational health and safety management system	pp. 76–77, 79	
	403–2 Hazard identification, risk assessment, and incident investigation	pp. 77–79	
	403–3 Occupational health services	pp. 78–79	
	403–4 Worker participation, consultation, and communication on occupational health and safety	pp. 78, 81	
	403–5 Worker training on occupational health and safety	pp. 78, 81	
	403–6 Promotion of worker health	pp. 78–79	
	403–7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	pp. 79–80	
	403–9 Work-related injuries	pp. 81–82, 100	Omission because no information available. We do not track the number and rate of high consequence work-related injuries as this is no category of our internal controlling system. We will check the usage for the future. We also do not collect the types of work-related injuries.

GRI Standard	Disclosure	Location	Omission and add. information
Material topics			
Organizational resilience			
GRI 3: Material Topics 2021	3 – 3 Management of material topics	pp. 73–74, 83–89	
GRI 404 Training and Education 2016	404 – 1 Average hours of training per year per employee	pp. 89, 94	We are currently only monitoring this KPI in total, per region and gender, and not per employee category. We will check the feasibility to expand our KPIs in the next reporting years.
	404 – 3 Percentage of employees receiving regular performance and career development reviews	pp. 89, 94	We are currently only monitoring this KPI in total and not per gender and employee category. We will check the feasibility to expand our KPIs in the next reporting years.
GRI 405 Diversity and Equal Opportunity 2016	405 – 1 Diversity of governance bodies and employees	pp. 95–96	

7.4 Independent Assurance Statement

Independent Assurance Statement

To the Management and Stakeholders of Rain Carbon

DQS has been engaged by Rain Carbon to provide independent assurance over a specific set of environmental performance indicators. The engagement took place in February 2023 and was concluded on March 3, 2023.

Objectives

The objective of this assurance engagement was to independently express conclusions on underlying reporting processes and validate qualitative and quantitative claims, so as to limit misinterpretation by stakeholders and increase the overall credibility of the reported information and data.

Scope of assurance

The assurance encompassed selected environmental data from the reporting period January 2022 to December 2022, as referenced in Annex A. The assessment includes all indicators as referenced in Annex A, except RCI Mat 2 and RCI Mat 3.

The assurance engagement was performed in accordance with a Type 2 assurance of the AA1000 Assurance Standard (AA1000AS v3), which consists of:

- Evaluating the company's sustainability framework and processes using the inclusivity, materiality, responsiveness and impact criteria of the AA1000 AccountAbility Principles (AA1000APS 2018), though limited to the selected indicators listed above, and
- Evaluating the quality of the reported sustainability performance information.

Level of assurance and limitations

A moderate level of assurance under AA1000AS was provided for this engagement. Information and performance data subject to assurance is limited to the scope described above.

The assurance did not cover financial data, technical descriptions of buildings, equipment and production processes or other information not related to sustainability.

Independence and Competences of the Assurance Provider

The DQS Group is an independent professional services firm that provides assurance on sustainability disclosures under the Global Reporting Initiative (GRI), CDP and other specialized management and reporting mechanisms. Independent verifiers have not been involved in the development of the report nor have they been associated with Rain Carbon's sustainability program, data collection or strategic processes.

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60433 Frankfurt am Main
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AA1000
Licensed Assurance Provider
000-169

www.dqsglobal.com

DQS Group ensures that the assurance team possesses the required competencies, maintained neutrality and performed ethically throughout the engagement. Further information, including a statement of impartiality, can be found at: www.dqsglobal.com.

The management of Rain Carbon was responsible for the preparation of the sustainability data.

Assurance Methodology

The assurance procedures and principles used for this engagement were drawn from the International Standard AA1000 and methodology developed by DQS, which consists of the following steps:

1. Identifying statements and data sets, which are classified according to the relevant data owners and the type of evidence required for the verification process.
2. Reviewing the Guidance Document for the Sustainability Data Management
3. Identify samples of data to be assessed, reflecting the structure and operations of Rain Carbon
4. Assessing the collected information and provide recommendations for immediate correction where required or for future improvement of the report content.

The sampling approach covered all indicators within the scope, for the following sites:

- Castrop-Rauxel, Germany
- Kurnool, India
- Visakhapatnam, India
- Duisburg, Germany
- Kedzierzyn-Kozle, Poland
- Purvis, USA
- Norco, USA
- Gramercy, USA

Evaluation of Data Quality

Nothing has come to our attention that causes us to believe that the environmental performance indicators of Rain Carbon as shown in Annex A are materially misstated. The definitions, boundaries, assumptions, procedures and responsibilities for data management are described in a comprehensive and transparent manner in the Data Management Guidance document. The data templates for collecting and consolidating the data are structured in such a way as to enable independent verification.

Through a sampling procedure, the assurance team found that the sites generally adhere to the procedures set out in the guidance document. For certain sites, the assurance team noted isolated lapses in data quality, which did not affect the overall reliability of the reported information. Most of these lapses have been corrected during the course of the assurance engagement. For the remaining issues, measures will be taken to improve data quality in future reporting cycles even further.

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It is recommended that Rain Carbon continues the current data management approach and uses the findings of this initial assurance engagement to improve data quality even further. The assurance team also recommends establishing tighter controls on evidence keeping, in order to ensure that all sites adhere to the same high evidence keeping standards.

Evaluation of the adherence to AA1000 AccountAbility Principles

Inclusivity – *People should have a say in the decisions that impact them*

The stakeholder identification and engagement process was outside the scope of the assurance engagement.

Materiality – *Decision makers should identify and be clear about the sustainability topics that matter*

The environmental data included in the scope of the assurance engagement consists of environmental performance indicators for environmental topics that are considered material, through a materiality assessment. The materiality assessment itself was outside the scope of the assurance engagement.

Responsiveness – *Organizations should act transparently on material sustainability topics and their related impacts*

Rain Carbon is responding to those issues that it has identified as material and demonstrates this in its environmental performance indicators. The organization and its stakeholders can use the reported environmental information as a reasonable basis for their opinions and decision-making.

Impact – *Organizations should monitor, measure and be accountable for how their actions affect their broaders ecosystems*

Rain Carbon has implemented systems to monitor and measure its environmental impacts, through selected performance indicators based on the GRI standards. The company has set up a comprehensive and robust environmental data reporting approach.

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Conclusion

On the basis of a moderate assurance engagement according to the above-listed criteria, nothing has come to our attention that causes us to believe that the environmental performance indicators of Rain Carbon as shown in Annex A are materially misstated.

On behalf of the assurance team

March 10, 2023

Frankfurt, Germany

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Annexes

Annex A – 2023_03_09_Rain Sustainability Data Evaluation CY 2022.pdf, Version: March, 2023

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