Preserve what matters

SUSTAINABILITY AT CORBION

- PRESERVING FOOD AND FOOD PRODUCTION
- PRESERVING HEALTH
- PRESERVING THE PLANET

Corbion
Keep creating

Contents

Corbion champions preservation in all its forms

Using science to propel nature's ingenuity

Living on one planet, we are fast running out of time. Whilst populations are growing, the resources left to serve them are diminishing. For the sake of current and future generations, we need to shift gears. To stop taking for granted that there'll always be more, and start finding new ways of operating. Ways which don't just take, but which respect the planet's natural boundaries.To do this, we need to take a stand. To put preservation at the heart of everything we do.

At Corbion, we exist to champion preservation in all its forms, preserving food and food production, health, and our planet. This isn't about maintaining the status quo; it's about finding new ways of operating in a changing environment. It's about empowering one another, and the world, to do more with less.

Preserving food and food production

Preserving health

Preserving the planet

Measuring what matters

Measuring our impact

The 17 sustainable development goals clearly cannot be accomplished by any government or company on its own; their achievement is possible only if we all do our part. At Corbion, we believe companies should focus where they can make the greatest impact. To determine our own strategic focus, we performed an SDG impact assessment, consisting of four steps:

Product impact assessment
- Analyze Corbion's value chain
- Determine key impact areas
- Collect and review supporting evidence

Supply chain impact assessment
- Analyze Corbion's supply chain
- Determine key impact areas
- Collect and review supporting evidence

SDG mapping & prioritization
- Connect key impact areas with the SDGs
- Revenue analysis
- Materiality assessment

Target setting
- Select suitable KPIs
- Set ambitious targets

Based on these assessments, Corbion has chosen to focus on SDG 2, SDG 3 and SDG 12 as the goals on which it believes it can make the most significant positive impact, given our business activities. To make a credible and meaningful impact on the Sustainable Development Goals, Corbion aims to minimize any negative impacts while maximizing positive impact. For example, specific Corbion products (e.g., products that replace an alternative with a higher carbon footprint) have a net positive impact on SDG13, but this does not relieve Corbion of the responsibility to reduce its GHG emissions.

		Impacted SDGs
Maximize positive impact	Focus SDGs	2 ZERO HUNGER; 3 GOOD HEALTH AND WELL-BEING; 12 RESPONSIBLE CONSUMPTION AND PRODUCTION
	Linking SDGs	13 CLIMATE ACTION; 14 LIFE BELOW WATER
Minimize negative impact	Material	2 ZERO HUNGER; 13 CLIMATE ACTION; 15 LIFE ON LAND
	Not material	6 CLEAN WATER AND SANITATION; 8 DECENT WORK AND ECONOMIC GROWTH; 12 RESPONSIBLE CONSUMPTION AND PRODUCTION

More information on Corbion's SDG assessment, read our white paper 'Measuring what matters'

Corbion's impact on the Sustainable Development Goals

Preserving food and food production (SDG2 Zero hunger) is about creating a sustainable food system capable of feeding a growing population, given the boundaries of our planet. Corbion's solutions for shelf life extension, food safety, animal health and aquaculture support this ambition. We also collaborate with our agriculture-derived raw material suppliers to promote sustainable agriculture and ensure deforestation-free sourcing.

Preserving health (SDG3 Good health and well-being) is about supporting healthy lives and promoting well-being at all ages. Corbion's solutions for health care, pharma, nutrition and hygiene contribute to some of the underlying targets defined for SDG3. We also care for the health and well-being of our own employees and supply chain partners.

Preserving our planet (SDG12 Responsible production and consumption) is about moving toward a circular economy. Biobased chemicals and materials from Corbion play an essential role in promoting SDG12 and helping to create a circular economy. SDG12 also includes food waste reduction as a sub-target, and our work to create zero waste, improve energy efficiency, reduce greenhouse gas emissions, and implement our new circular production technology in our manufacturing plants also contributes to this goal.

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SDG2 targets to which Corbion contributes

- ✔ **Target 2.1.** By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round
- ✔ **Target 2.4.** By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality

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SDG3 targets to which Corbion contributes

- ✔ **Target 3.3.** By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases
- ✔ **Target 3.4.** By 2030, reduce by one third premature mortality from noncommunicable diseases through prevention and treatment and promote mental health and well-being
- ✔ **Target 3.5.** Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol
- ✔ **Target 3.7.** By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programs
- ✔ **Target 3.8.** Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all
- ✔ **Target 3.9.** By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

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SDG12 targets to which Corbion contributes

- ✔ **Target 12.2.** By 2030, achieve the sustainable management and efficient use of natural resources
- ✔ **Target 12.3.** By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses
- ✔ **Target 12.4.** By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their lifecycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment
- ✔ **Target 12.5.** By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

Corbion's SDG contribution

To monitor our current impact on our three focus SDGs (2, 3, and 13), we started to track the overall contribution to each of these SDGs as percentage of Corbion's total revenues. In 2020, 61% of Corbion's net sales contributed to preserving food and food production, health, and/or the planet. We aim to increase this percentage to >80% by 2030, by growing our business in food preservation, PLA, and algae-based ingredients. To ensure that our innovations contribute to this target, we also assess our innovation projects on their SDG contribution, as part of the innovation stage gate process. At the end of 2020, 100% of our innovation projects contributed to one or more of the SDGs.

	2020	2025	2030
% of products contributing to preserving food and food production, health and/or the planet[1,2]	61%	>70%	>80%
% of innovation projects contributing to preserving food and food production, health and/or the planet[1,3]	100%	100%	100%

		2020
2 ZERO HUNGER	% of products contributing to preserving food and food production[1,2]	30%
	% of innovation projects contributing to preserving food and food production[1,3]	60%

		2020
3 GOOD HEALTH AND WELL-BEING	% of products contributing to preserving health[1,2]	34%
	% of innovation projects contributing to preserving health[1,3]	94%

		2020
12 RESPONSIBLE CONSUMPTION AND PRODUCTION	% of products contributing to preserving the planet[1,2]	50%
	% of innovation projects contributing to preserving the planet[1,3]	84%

[1] *Products/innovation projects for which there is evidence that the product/innovation projects contributes to the identified impact categories.*
[2] *By revenues.*
[3] *By expected revenues in year 5 after commercialization.*

Preserving food & food production

- Preserving food safety, shelf-life, texture, and nutritional benefits with food solutions
- Preserving ecosystems by offering alternative aquaculture feed to prevent overfishing
- Preserving natural resources by partnering with our suppliers to promote sustainable agriculture

KPI	2030 Target[1]	2025 Target[1]	2020	2019[2]
% of cane sugar verified responsibly sourced[3]	100%	100%	66%	n/a
% of verified deforestation-free key agricultural raw materials[4,5]	100%	100%	83%	n/a
% of products sold contributing to preserving food and food production[6] covered by Product Social Metric assessment[7]	100%	50%	1%	n/a

Story: We create sustainable sugar

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Preserving food safety and shelf life

Of the 263 million tonnes of meat produced globally over 20% is lost or wasted.

Corbion's solutions for meat preservation provide extended shelf life and food safety, which can help to reduce food waste.

In 2020, Corbion products were used to preserve **5,900,000 tons** of meat globally.

Corbion helps preserve
›5 million
tons of meat globally

Preserving food & food p

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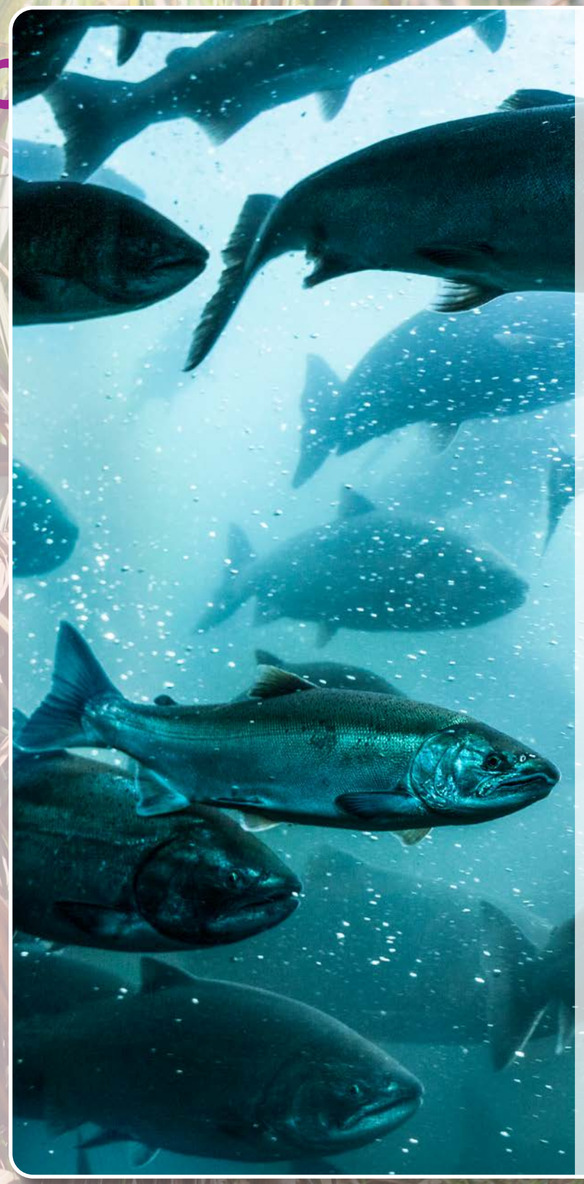

Preserving ecosystems by offering alternative aquaculture feed

Aquaculture's share of global fishmeal and fish oil consumption has expanded phenomenally over the past decades, increasing the risk of overfishing.

AlgaPrime™ DHA can help reduce depletion of small marine fish.

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Preserving natural resources by sustainable agriculture

We partner with our suppliers and sector initiatives to promote sustainable agriculture.

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Preserving natural resources by sustainable agriculture

A sustainable agricultural supply chain is crucial to our business as we rely on agriculture for our biobased raw materials. It is also vital to the communities in which we operate and to our planet's resources. We recognize that intensive agriculture can have negative consequences for people and the environment. The agriculture sector is the second-largest source of GHG emissions globally and farming of sugarcane and oil palm has been linked to issues such as forced and child labor. Sustainable agriculture, however, has the potential to protect the planet, enhance the economic viability of the agricultural sector, and support the livelihoods and well-being of farmers and the communities they work in. Our sustainable agriculture policy describes our vision and key principles for sustainable agriculture, including protecting biodiversity, eliminating deforestation, stewardship of the air, soil and water, and mitigating climate change. Our cane sugar code defines the specific requirements for the production of sustainable cane sugar, based on the definitions for sustainable sugarcane and derived products as set out by Bonsucro. Our palm-oil policy describes our requirements for responsible sourcing of palm, including no deforestation, no peat, and no exploitation.

Corbion is not directly involved with the growing, harvesting, and processing of the crops used to make our raw materials. We partner with our direct suppliers, conservation solution providers and engage with other stakeholders involved in our agricultural supply chains to promote our vision for sustainable agriculture. We also implement relevant certification schemes including Bonsucro and RSPO. Globally some 5% of the sugar cane growing areas is certified and for our main sourcing area, Thailand, this is less than 2%. We therefore audit our cane sugar suppliers against the Corbion cane sugar code if they are not yet able to deliver Bonsucro-certified sugar.

Go back

We create sustainable sugar

Corbion sugar supplier leads the change toward sustainable farming

Watch video here

The team

The team

The sugarcane industry is critical to Thailand's economy, employing more than 1.5 million people and generating almost USD $6 billion per year. As the world's second biggest exporter of sugar, the country has set its sights on becoming a leading bioeconomy hub in the region, using sugarcane as a main feedstock for Thai biorefineries producing biofuels, biochemicals and biopharmaceuticals. However, the industry is grappling with sustainability issues related to cultivation and milling. Using Bonsucro (an international not-for-profit, multi-stakeholder organization promoting sustainable practices in the sugar cane industry) as a platform for collaboration, and guided by its Standards, a number of key players are working towards an improved industry.

Mitr Phol, the world's fourth-largest sugar producer, has been in the value-added sugarcane business for more than 50 years and a supplier to Corbion since 2007. In 2016, the company became the first in Thailand and the second in all of Asia to be certified by Bonsucro. Last year, the Total Corbion PLA joint venture became the first PLA producer to be Bonsucro certified, using Mitr Phol sugar at the lactic acid polymerization plant in Rayong, Thailand.

Corbion's certification demonstrates that the company "is committed to the responsible sourcing of the sugar that goes into its bioplastics production," says Rick Lyu, Bonsucro Regional Director for Asia, and the decision to base our plant in Thailand "is testament to the drive that the Thai sugarcane industry is showing to become a leader in sustainability."

The project

More than 30,000 cane growers in the region comprise the bulk of the Mitr Phol supply chain. With so much of its productivity and sustainability constrained by the output and practices of these farmers, Mitr Phol committed several years ago to promoting the use of modern farming methods and technologies by its suppliers.

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"Helping our farmers modernize not only helps them minimize costs and get better crop yields," said Jamnan Khodphuvieng, Sugarcane Farm Technology & Development Manager at Mitr Phol, "it makes them more aware of the impact their business has on society and the environment."

Toward that end, the company launched a "smart farming" project about five years ago called Mitr Phol Modern Farm. The demonstration farm allows sugarcane farmers to see modern growing methods and technologies in action and learn how to implement them in their own operations.

The challenge

The cane growers who supply Mitr Phol operate independently. Achieving widespread adoption of modern practices among these farmers meant overcoming two key challenges: the considerable investment required by technology change, and a resistance to change itself. Mitr Phol took two strategic measures.

First, a program was instituted by which farmers could obtain loans to finance their investment in modernizing. Terms depend on the scale of the farmer's operations; small farmers who might share equipment with neighboring small-scale growers can obtain a group loan to lighten the financial burden.

Second, after successfully training "early adopters" at the demonstration farm, Mitr Phol wisely recruited those farmers to train other growers.

"It was important to build trust," Ms. Khodphuvieng said. "Being trained by peers who could share their own experiences in modern farming helped many to change their minds about using new technologies." New farmers step into the role of trainer each year, teaching other growers and sharing personal insights into sustainable farming.

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The team

The outcome

"More and more of our farmers have been embracing modern farming practices," Khodphuvieng said. "They grow more cane, which means growth, too, for Mitr Phol." And sustainability gains can be seen in numerous improvements.

Adjusting the space between sugarcane plants and better controlling truck traffic is reducing crop losses. Techniques for maintaining loosened soil, and a GPS system for controlling large agricultural machines are being used. Water is used more efficiently while increasing production. When not growing sugarcane, farmers grow legumes to cut pesticide use and improve soil quality. Cane leaves are left on the ground instead of burned to better retain soil moisture and reduce global warming.

The experience

By benchmarking best practices in other cane-growing countries, Mitr Phol incorporates some of the most efficient methods of producing quality sugarcane into teachings at the demonstration farm.

Mitr Phol's efforts to help cane growers reduce production costs through "smart farming" was recognized when the company received the Bonsucro Sustainability Award in 2015.

"The recognition and certification by Bonsucro is something we are very proud of at Mitr Phol," Ms. Khodphuvieng said. "Reaching this point has been hard work, but the commitment and support of our management team has helped us come a long way on our sustainability journey."

The future

With Corbion working to drive demand for responsibly produced cane sugar and Mitr Phol supporting farmers' efforts to meet that demand, the two companies are strengthening a crucial aspect of our overall sustainability efforts. Together, we are making an impact at the point where Corbion's sustainability story actually begins.

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Cane sugar

Cane sugar is our largest agriculture-derived raw material by quantity and is used at our manufacturing sites in Thailand and Brazil. Our cane sugar code defines what we expect of our cane sugar suppliers in regards to our responsible sourcing commitment. It is an extension of the Corbion supplier code that includes additional principles and criteria concerning land rights, good agricultural practices and biodiversity. It is based on the definitions of sustainable sugarcane and derived products as set forth by Bonsucro, an international not-for-profit, multi-stakeholder organization established to promote sustainable sugar cane. To validate that our supplier meet these requirements, we have implemented a formal auditing process, which includes a full audit of the sugar mills and supply farms every three years and an annual re-assessment.

Awareness
- Introduction cane sugar code to cane sugar suppliers
- Request cane sugar suppliers to sign code to formalize commitment

Self-assessment
- Request suppliers to complete a self-assessment questionnaire (SAQ) to confirm compliance with the cane sugar code

Third-party assessment
- Audit sugar mills by independant third-party auditor
- Audit sample of sugarcane farmers by independent third-party auditor

Continuous improvement
- Sugar mills and farms implement action plans to improve performance
- Full audit conducted every three years with annual surveillance audits

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Deforestation

To provide more transparency on the risk of deforestation in our agriculture supply chains, we developed a new KPI to track the percentage of key agricultural raw materials purchased that is verified deforestation-free. About 50% of our key agricultural raw materials is sourced in North-America, where deforestation is not an issue. For sugar and palm oil, the absence of deforestation is verified through audits and Bonsucro or RSPO certification. We also use satellite studies to do an initial assessment of the sourcing region.

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[5] *Through Bonsucro certification, RSPO certification, or other certification covering deforestation; or demonstrated to be deforestation-free based on satellite data, third-party audits (e.g. Corbion cane sugar code audit), and/or country of origin statements, by quantity. Footnote*
[6] *Products for which there is evidence that the product contributes to the identified impact categories.*
[7] *The Product Social Metrics assessment is done according to the methodology described in the Handbook for Product Social Impact Assessment, published by the Roundtable for Product Social Metrics and applies to products manufactured at Corbion sites (outsourcing is excluded). By quantity.*

Preserving food & food p

- Preserving food safety, shelf-life, texture, and nutritional benefits with food solutions
- Preserving ecosystems by offering alternative aquaculture feed to prevent overfishing
- Preserving natural resources by partnering with our suppliers to promote sustainable agriculture

KPI	2030 Target[1]	2025 Target[1]	2020	2019[2]
% of cane sugar verified responsibly sourced[3]	100%	100%	66%	n/a
% of verified deforestation-free key agricultural raw materials[4,5]	100%	100%	83%	n/a
% of products sold contributing to preserving food and food production[6] covered by Product Social Metric assessment[7]	100%	50%	1%	n/a

Product Social Metrics assessment

To make a positive impact on people, we need to understand the social impact of business activities throughout our supply chain and how they affect our stakeholders. In 2017, Corbion joined the Roundtable for Product Social Metrics, and together with the other Roundtable members, we developed a methodology for measuring social impacts, which is available in the Roundtable's handbook. The handbook provides a framework, an overview of data collection tools, and a scoring approach to assess social impacts.

Read more about our first case study here.

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3 GOOD HEALTH AND WELL-BEING

Preserving health

- Preserving the safety of our people
- Preserving nutritional value with sustainable food solutions
- Preserving heart health with algae solutions
- Preserving health and well-being with biomedical solutions
- Preserving hygiene and health with biochemical solutions

KPI	2030 Target[1]	2025 Target[1]	2020	2019[2]
Total Recordable Injury Rate[3]	< 0.25	< 0.5	0.87	0.83
% of sites[4] certified according to internationally recognized food safety management system standards[5]	100%	100%	100%	100%
# of SIN list[6] chemicals produced	0	0	0	0
# of EU REACH Candidate List chemicals produced	0	0	0	0
# of EU REACH Authorizaton List chemicals produced	0	0	0	0
% of products sold contributing to preserving health[7] covered by by Product Social Metric assessment[8,9]	100%	50%	1%	n/a

Story: Care-driven innovation

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Preserving the safety of our people

Corbion's goal is to create a healthy, safe and environmentally friendly workplace. No job is so important that it cannot be done safely or without adverse environmental or communal impact.

Our leadership fosters an open and transparent culture in order to continuously improve our safety and environmental performance.

Aiming for a **Zero-incident** workplace

3 GOOD HEALTH AND WELL-BEING

Preserving health

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Preserving nutritional value

Worldwide, osteoporosis causes more than 8.9 million fractures annually, resulting in an osteoporotic fracture every 3 seconds.

Corbion offers solutions for calcium fortification in beverages.

Studies in children and adolescents have shown that supplementation with calcium, dairy calcium-enriched foods or milk enhances the rate of bone mineral acquisition.

8.9 milllion fractures annually = 1 fracture every **3** seconds

3 GOOD HEALTH AND WELL-BEING

Preserving health

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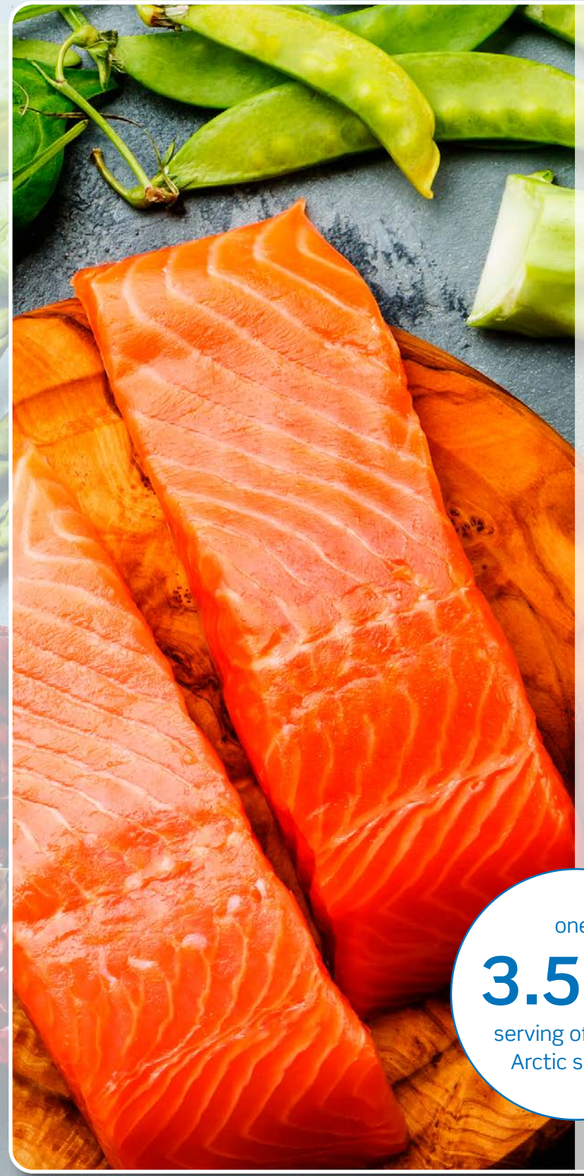

Preserving heart health with algae solutions

AlgaPrime™ DHA is a clean and sustainable source of long chain omega-3s from algae, high in omega-3 DHA, that helps to enhance the nutritional value of seafood. This ingredient is a key source of omega-3 fatty acids fed to Kvarøy Arctic™ Atlantic salmon, contributing to the salmon's official certification by the American Heart Association's® Heart-Check Food Certification Program.

One 3.5-ounce serving of Kvarøy Arctic's Atlantic salmon has **over 2,000mg of long-chain omega-3s helping** to exceed the weekly intake recommendation set by the U.S. Dietary Guidelines and American Heart Association.

one **3.5 oz** serving of Kvarøy Arctic salmon

=

Helping to exceed the **weekly** U.S. recommendation for omega-3s

Preserving health

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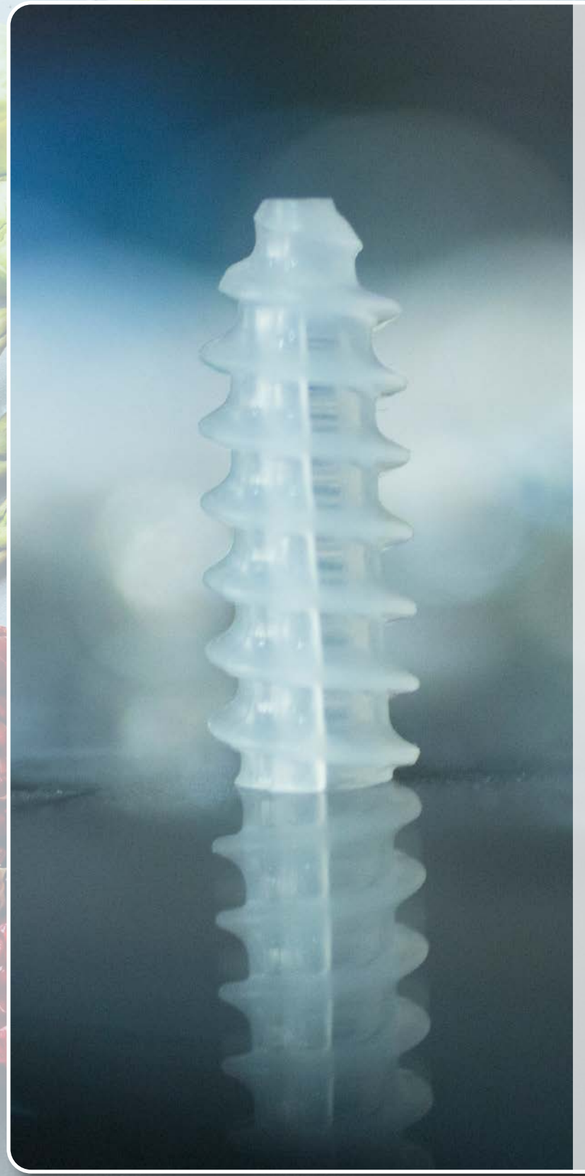

Preserving health and well-being with biomedical solutions

Resorbable orthopedic implants containing our biobased materials are today treating a wide range of injuries to the musculoskeletal system in areas like sports medicine, trauma and spinal surgery.

The biodegradability of the orthopedic devices leads to a reduced need for follow-up surgery. This benefits the patient and improves affordability of health care.

Preserving health

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Preserving hygiene and health with biochemical solutions

Our antimicrobial solutions for home and personal care are ideal for the development of safe, environmentally-friendly human hygiene products such as hand soaps, hand sanitizers and body washes.

Sanitizing hand gel and hand soap containing **PURAC® Sanilac inactivated 99.99% of Coronavirus** after 1 minute of contact time.*

Benefits of our solutions:
- Antiviral
- Non-toxic to humans and the environment
- Non-sensitizing to skin

after **1 minute** of contact = **99.99%** *Coronavirus particles inactivated

** BluTest Laboratories EN 14476*

Care-driven innovation

Corbion employees truly care about the impact of their work in people's lives. That drives them to keep finding new ways to leverage our highly specialized core competencies.

Since the 1960s, Corbion has steadily grown its expertise in polymerization and purification, applying it in the production of patient-friendly biomedical applications. As our knowledge has deepened over time, the benefits we deliver to patients and health care systems have taken on entirely new dimensions.

It began with sutures. Creating resorbable polymers delivered as mono- or multi-filaments enabled surgeons to close wounds with material that would gradually be absorbed by the body without the added step of suture removal after healing. That business has grown increasingly sophisticated in terms of product offerings and processing technique options.
In the 1980s, our ability to fine-tune the building blocks of various PURASORB® polymers led to the creation of controlled release drug delivery systems that enable consistent, appropriate dosage over days, weeks, or months through an implant or a single injection.

Over time, the medical industry has come to recognize and value our degree of expertise in this area and Corbion is known as a trusted collaborator committed to delivering the highest quality products.

New capabilities

For years now, Corbion has produced the resorbable polymers to make biodegradable screws, pins, and plates used by surgeons to immobilize bone fractures. While the implants stay in place long enough for bone tissue regeneration to take place and healing to occur, they slowly break down and are absorbed by the body, eliminating a second surgical procedure to remove the devices.

Continue reading

Care-driven innovation

Such Corbion products have helped countless patients heal with fewer invasive procedures and reduced trauma. But their relatively low inherent strength and minimal load-bearing capacity has limited the scope of their use to small bone fractures and special cases where patients could go for an extended period of time without standing.

The application scope will soon become largely extended, when we bring to market FiberLive®, a patented composite material combining resorbable glass fibers with resorbable polymers and a coupling agent to form the strongest fully resorbable material ever made. Like our other resorbable implant materials, the FiberLive® composite degrades as new bone tissue develops, but initially, it provides load-bearing strength up to six times greater than cortical bone, which is comparable to the strength of metal. Patients will not only avoid secondary surgeries to remove implants, they will also be back on their feet much sooner.

Benefits all around

Faster healing, consistently delivered medication, fewer complications, less trauma – all contribute to a better health care experience for medical patients, thanks to Corbion expertise. But patients aren't the only ones who benefit from our technology.

The overall health care system realizes cost savings by reducing the number of surgical procedures required. Prescription drugs are used more efficiently and accurately. Patient outcomes are improved by enabling precision care. Our customers – medical device manufacturers – are able to deliver greater, cost-saving value, and improved results to their customers. All of these benefits grew out of a single area of expertise and a shared desire to make a difference.

It is amazing how far caring and a really strong core competency can take you when you keep using it to invent, create, and discover new value.

Previous page

Preserving health

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Environment, Health and Safety

Corbion strives to create a safe and healthy workplace with the goal of having zero incidents; we believe no job is so important that it cannot be done safely and without adverse environmental impact. We operate with the greatest care for safety, health and the environment – for our employees and our communities. Our management system includes policies, procedures, training and feedback designed to foster compliance with laws and regulations applicable to our operations, and with our own corporate standards and codes. Corbion leadership and employees are working to achieve a “zero incident culture” characterized by openness, transparency and a shared sense of obligation to report all near misses, events, etc., in order to continuously improve our safety and environmental performance.

Our global Environmental Health and Safety (EHS) policy describes our overall approach and commitment. We are implementing ISO 45001 and our 10 Corbion Safety Rules on all sites.

Preserving health

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Product Social Metrics assessment

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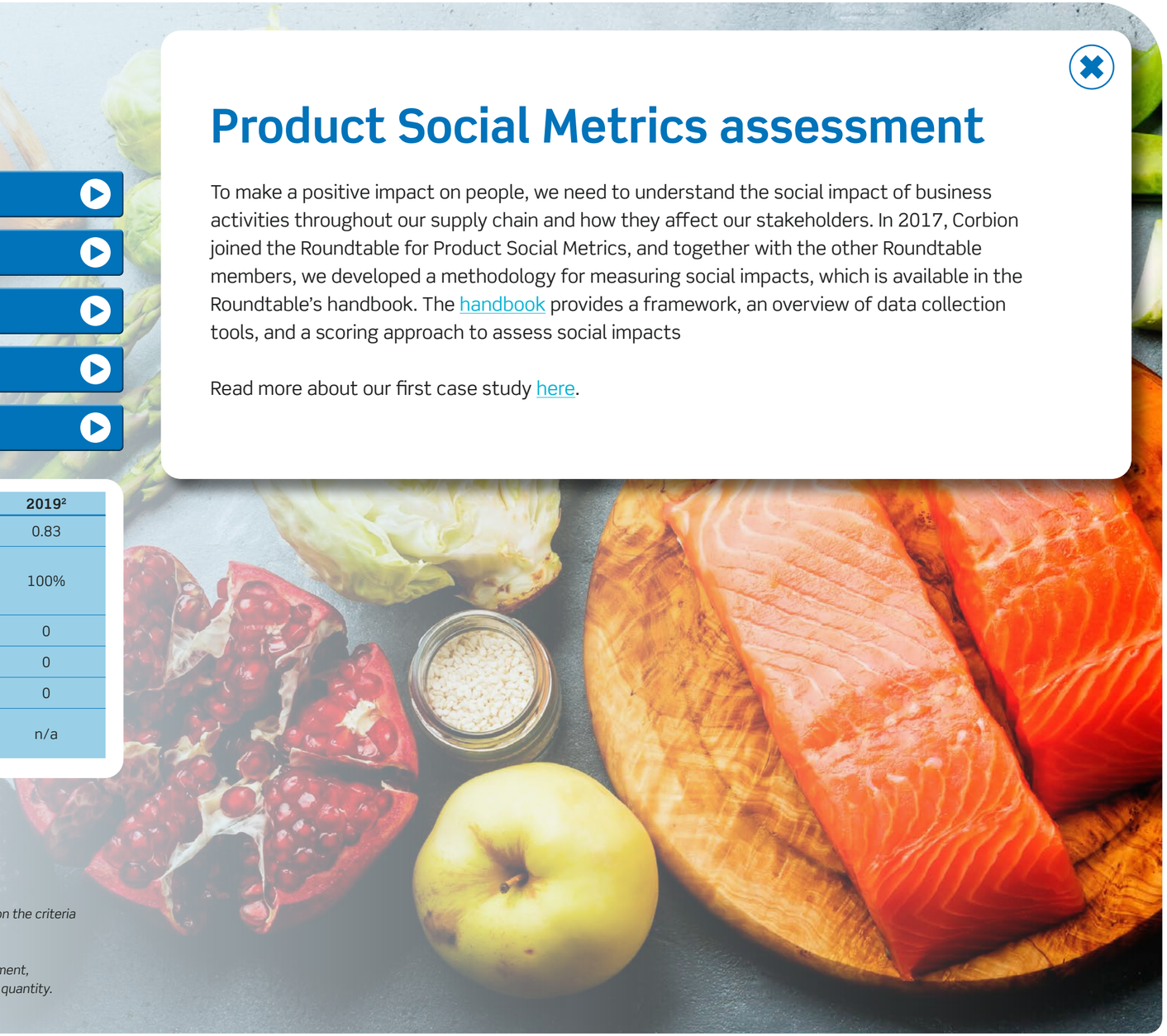
Read more about our first case study here.

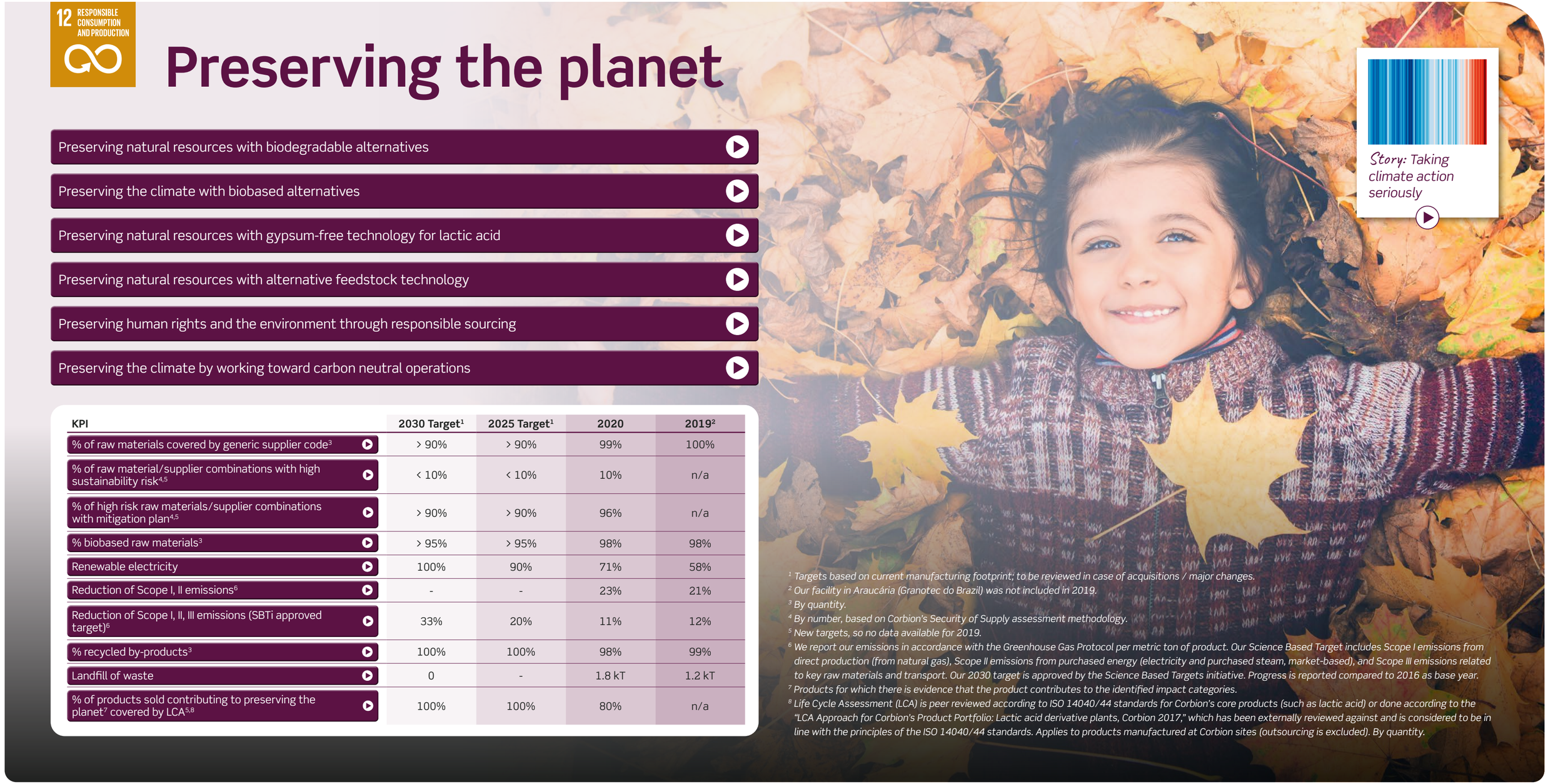


12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Preserving the planet

- Preserving natural resources with biodegradable alternatives
- Preserving the climate with biobased alternatives
- Preserving natural resources with gypsum-free technology for lactic acid
- Preserving natural resources with alternative feedstock technology
- Preserving human rights and the environment through responsible sourcing
- Preserving the climate by working toward carbon neutral operations

KPI	2030 Target[1]	2025 Target[1]	2020	2019[2]
% of raw materials covered by generic supplier code[3]	> 90%	> 90%	99%	100%
% of raw material/supplier combinations with high sustainability risk[4,5]	< 10%	< 10%	10%	n/a
% of high risk raw materials/supplier combinations with mitigation plan[4,5]	> 90%	> 90%	96%	n/a
% biobased raw materials[3]	> 95%	> 95%	98%	98%
Renewable electricity	100%	90%	71%	58%
Reduction of Scope I, II emissions[6]	-	-	23%	21%
Reduction of Scope I, II, III emissions (SBTi approved target)[6]	33%	20%	11%	12%
% recycled by-products[3]	100%	100%	98%	99%
Landfill of waste	0	-	1.8 kT	1.2 kT
% of products sold contributing to preserving the planet[7] covered by LCA[5,8]	100%	100%	80%	n/a



Story: Taking climate action seriously

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[3] *By quantity.*
[4] *By number, based on Corbion's Security of Supply assessment methodology.*
[5] *New targets, so no data available for 2019.*
[6] *We report our emissions in accordance with the Greenhouse Gas Protocol per metric ton of product. Our Science Based Target includes Scope I emissions from direct production (from natural gas), Scope II emissions from purchased energy (electricity and purchased steam, market-based), and Scope III emissions related to key raw materials and transport. Our 2030 target is approved by the Science Based Targets initiative. Progress is reported compared to 2016 as base year.*
[7] *Products for which there is evidence that the product contributes to the identified impact categories.*
[8] *Life Cycle Assessment (LCA) is peer reviewed according to ISO 14040/44 standards for Corbion's core products (such as lactic acid) or done according to the "LCA Approach for Corbion's Product Portfolio: Lactic acid derivative plants, Corbion 2017," which has been externally reviewed against and is considered to be in line with the principles of the ISO 14040/44 standards. Applies to products manufactured at Corbion sites (outsourcing is excluded). By quantity.*

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% of products sold contributing to preserving the planet[7] covered by LCA[5,8]	100%	100%	80%	n/a

Preserving natural resources with biodegradable alternatives

Contaminants of emerging concern, including personal care products, are increasingly detected in surface water, and there is concern about the impact on aquatic life.

Corbion's solutions for home and personal care are **biodegradable and safe for the user and for the environment.**

17 million ktons of cleaning products end up in the drain

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Preserving the planet

- Preserving natural resources with biodegradable alternatives
- Preserving the climate with biobased alternatives
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- Preserving natural resources with alternative feedstock technology
- Preserving human rights and the environment through responsible sourcing
- Preserving the climate by working toward carbon neutral operations

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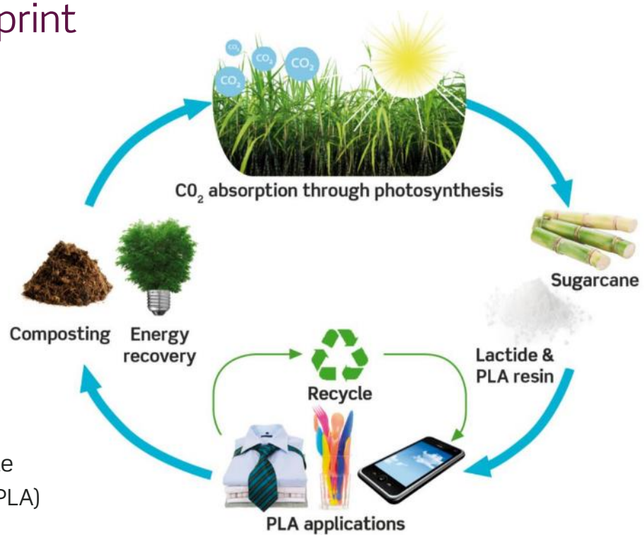
Preserving the climate with biobased alternatives

PLA bioplastics are 100% biobased and have a low carbon footprint



Carbon Footprint

(kg CO_2 eq / kg polymer. Cradle-to-gate including -1.83 kg CO_2 absorption/kg PLA)

TOTAL | Corbion

** Sources: www.lca.plasticseurope.org, J Polym Environ 27, 2523–2539 (2019)*

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Preserving natural resources with gypsum-free technology for lactic acid

Most by-products of the conventional lactic acid process are reused or recycled. But in order to be truly circular, Corbion has explored the development of a lactic acid production process in which nearly all chemicals are recycled, resource efficiency is optimized and by-products are eliminated. Over the past decade, we have scaled-up this process from the lab to pilot scale to demonstration scale, giving us confidence that this process will prove viable on an industrial scale.

Lactic Acid Production (Today)

Lactic Acid Production (Gypsum Free)

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Preserving natural resources with alternative feedstock technology

Over the next few decades, world population growth will increase global demand for biomass to power food and industrial applications. Currently, sugar-based feedstocks are among the most efficient and sustainable crops. However, Corbion R&D continues to develop new processes to enable the production of biochemicals and bioplastics using alternative feedstocks.

Potential alternative feedstocks include non-food biomass crops, agricultural by-products and waste streams, such as miscanthus, wheat straw, bagasse, corn stover and wood chips. These feedstocks are often referred to as 'lignocellulosic' or 'second-generation' feedstocks. Converting these feedstocks into fermentable sugars requires a pre-treatment process to extract cellulose, hemicellulose and lignin. The cellulose and hemicellulose fractions are then hydrolyzed using enzymes to obtain C5 and C6 sugars. If C6 sugars are isolated and purified, they can be converted into lactic acid in an existing Corbion facility. Conversion of a C5/C6 sugar mixture, however, requires a new fermentation strain, a new production process and a new production plant.

Corbion has invested significantly in both technology routes. In 2015, Corbion became the first company to successfully produce the bioplastic Poly-Lactic Acid (PLA) from alternative feedstocks on lab scale.

- Figure 1: Annual carbohydrate yield per hectare for different feedstocks
- Figure 2: Converting alternative feedstocks into fermentable sugars

Link to statement

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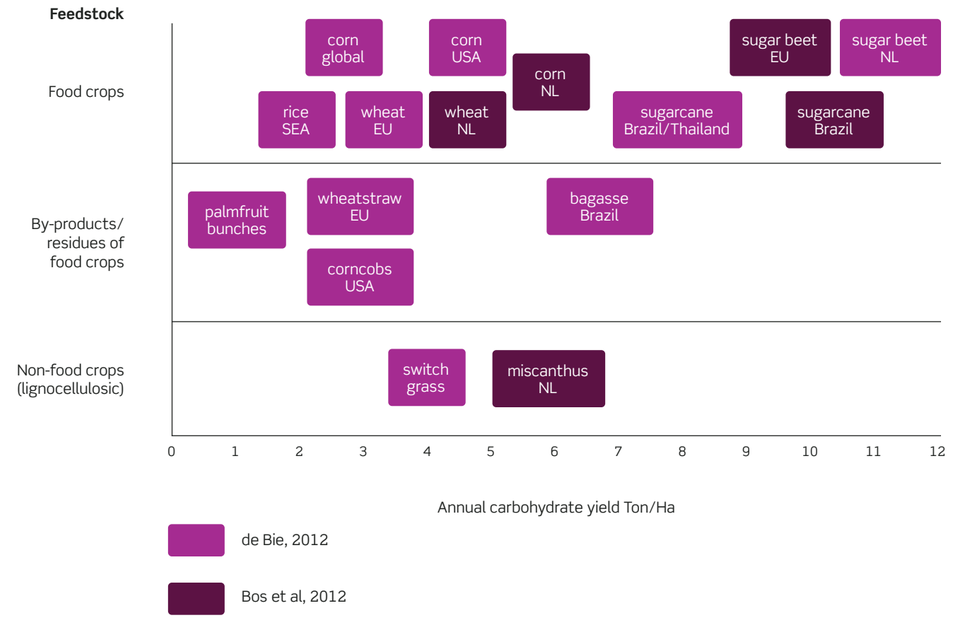

Nova 2013, based on de Bie 2012 & Bos et al. 2012

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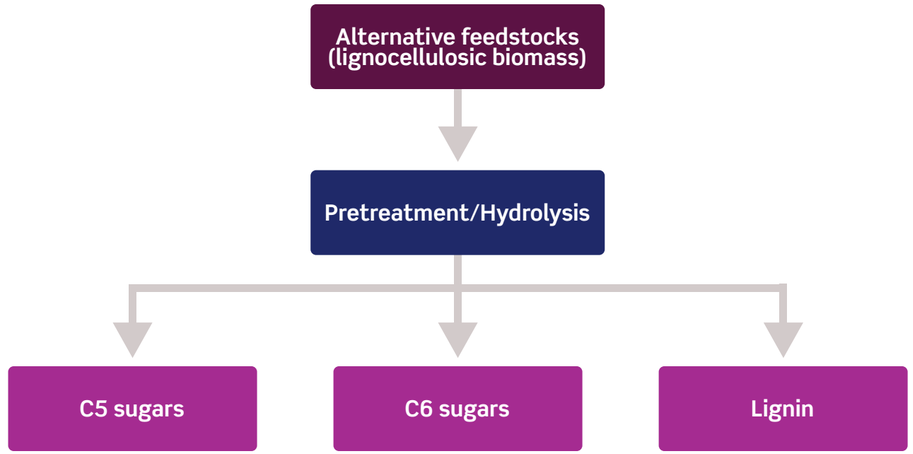

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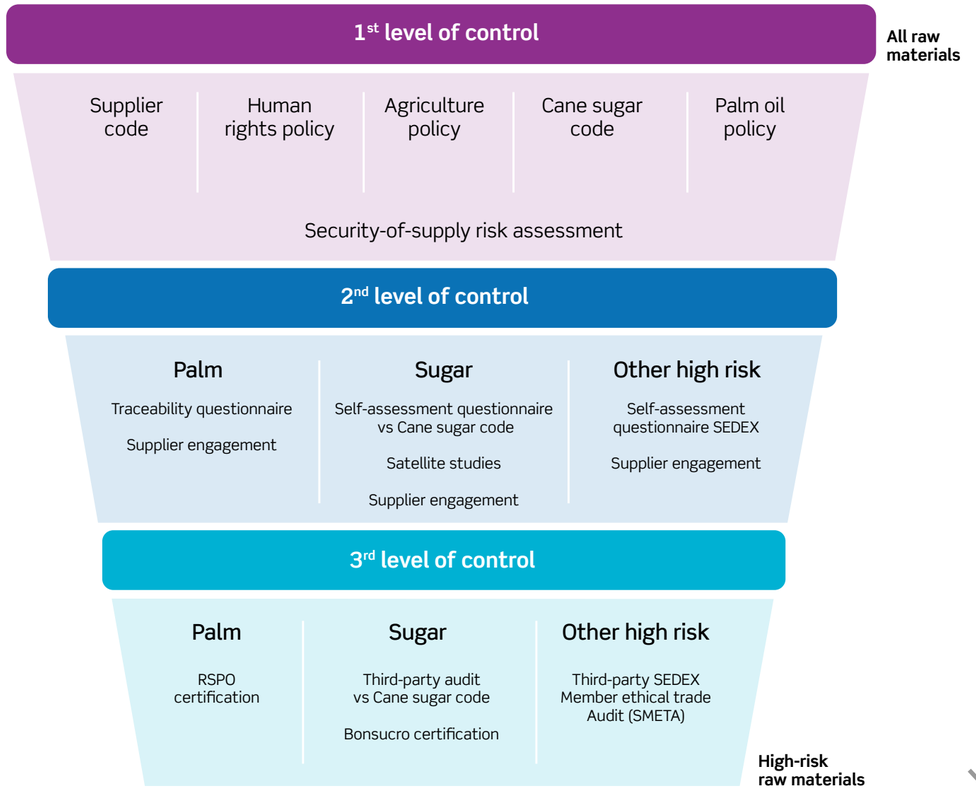
Preserving human rights and the environment through responsible sourcing



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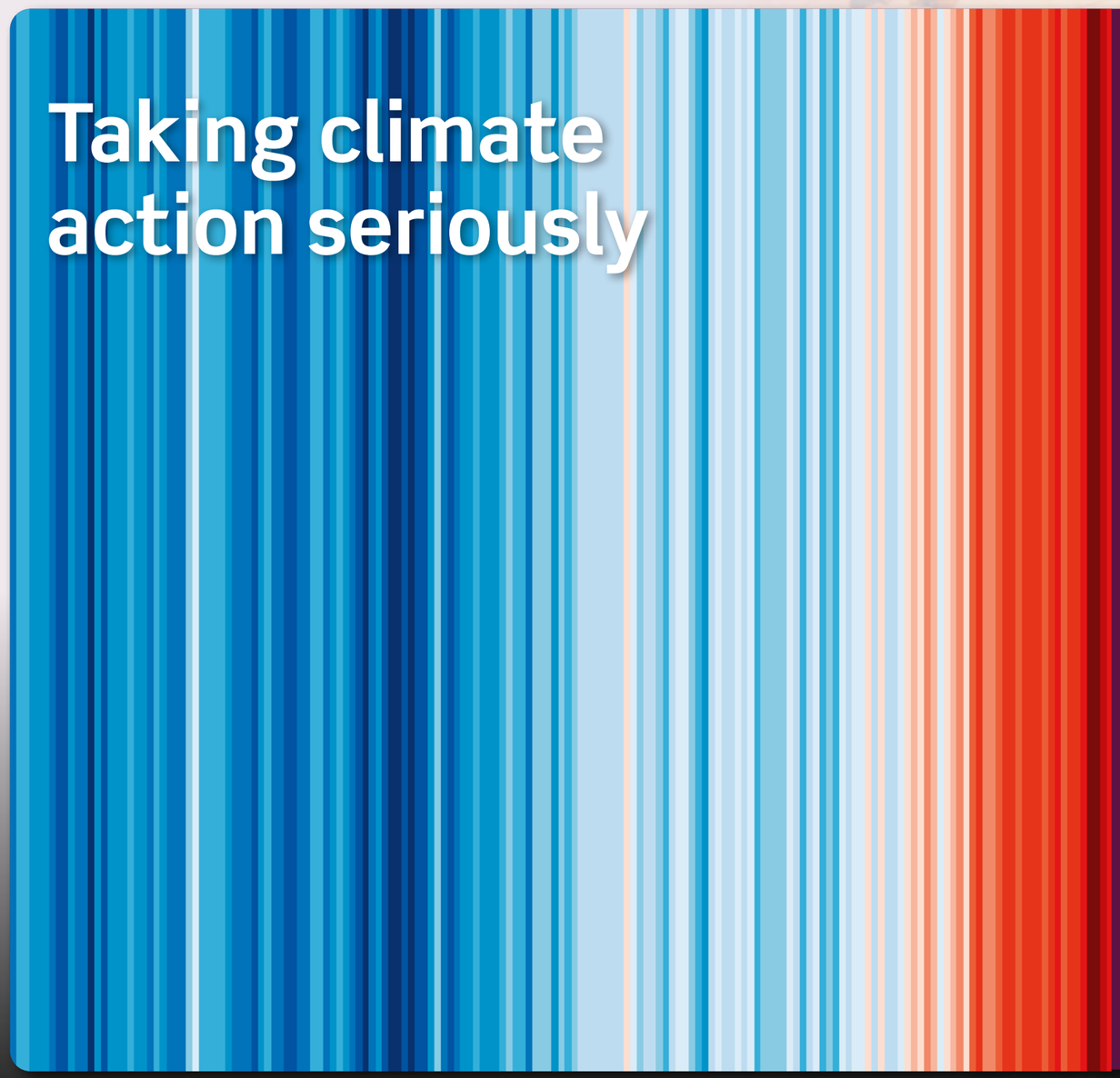
Preserving the climate by working toward carbon-neutral operations

Corbion committed to reduce CO_2 emissions related to energy, key raw materials and transport by 33% per ton of product, by 2030 from a 2016 base year

"To be a true leader in the circular economy, we need to lead by example and do our part to achieve the Paris Agreement."

Olivier Rigaud, CEO

Taking climate action seriously



We've all seen someone grow up right before our eyes. One day, we stop and think: When did they ... get so tall? That's because humans are very perceptive of immediate change, like the shift in the forecast. However, we hardly notice something as gradual as climate change or a kid growing up.

Climate scientist Ed Hawkins conceived of a way to visualize global warming with a simple visual called 'the climate stripes'. The blue and red bars indicate the average global temperature fluctuations starting at the end of the first Industrial Revolution in 1850 through 2018.

The Paris Agreement aims to combat climate change and to limit global warming to well below 2 °C above pre-industrial levels. Due to the considerable warming over the last decade and the catastrophic events that have taken place and will follow, the Paris Agreement wants to pursue efforts to further limit the temperature increase to 1.5 °C, as our temperature has already increased nearly to 1 °C since the agreement was signed in 2016.

So, what's the rush?

The Earth naturally goes through rises and falls in temperature. There have been ice ages and interglacial warm periods. Geological records that capture these fluctuations over the course of the last million years show CO_2 levels were changed through natural causation like volcanic eruptions, orbital shifts, and solar changes.

What has caused the global urgency in recent years, is the unprecedented rate at which our average temperatures are rising due to the increase of CO_2, which has been linked to human activity and will continue to rise with the growth of population and wealth.

Continue reading

Taking climate action seriously

Achievable and measurable targets

Director of Sustainability Diana Visser says, “We are now seeing the effects around the world. It’s scary to see the wildfires in Australia, Hurricane Sandy, and other climate-related catastrophes. Climate change is accelerating quickly and we need to act now.”

In October, 2019, Corbion publicly made a commitment to climate-change action, making science-based targets part of our standard business practice and thereby setting an important precedent for our peers and partners to transition to a low-carbon economy.

It started nearly two years ago, when Corbion assembled a cross-functional team combining the knowledge of the Corbion ARTS community, Procurement, Operations and Engineering to set an ambitious carbon-emissions target and plan for the next 10 years, specifying engineering projects to save energy in our plants, R&D projects to develop next-generation technologies and specific supplier-engagement initiatives. It was a joint effort with nearly all plants involved to layout steps to reach our target.

After a thorough and independent validation process by the Science Based Targets initiative (SBTi), a partnership between CDP, UN Global Compact, WRI, and WWF, our science-based targets were approved. We committed to slash one-third of our product-related emissions by 2030. More specifically, we will reduce CO_2 emissions related to energy, key raw materials, and transport by 33% per ton of product by 2030 (from a 2016 base year), which is in line with the 2 °C limit set by the Paris Agreement.

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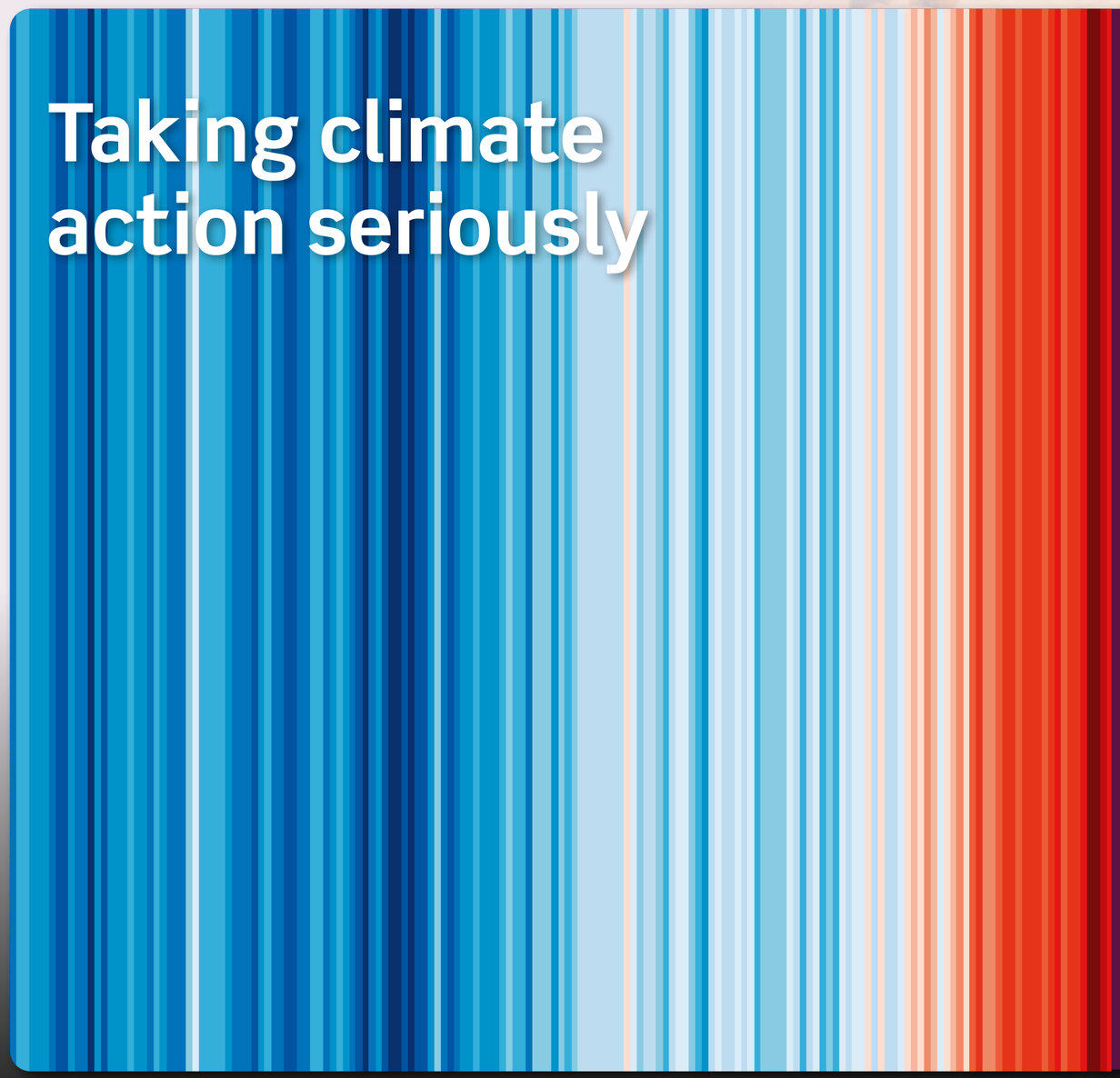
Taking climate action seriously



Corbion is proud to lead the way by setting science-based targets. CEO Olivier Rigaud says the world's future depends on the commitments we make today and on the ways we honor them. He says, "We must all become leaders in climate action, and do all we can to inspire each other to make a sustainable difference."

Diana says our dedication to SBTi will provide a clear pathway to a low-carbon economy with achievable and measurable steps.

"With our approved targets, we can say with confidence: We can measure what we value and value what we measure."

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Security of supply

We perform a security-of-supply assessment to evaluate our key raw materials in regards to procurement, quality and food safety, and sustainability. In each area, specific criteria are ranked in order to gauge the risk of supply issues. The business impact of any supply issue is considered in determining the overall score (high, medium, or low) for each aspect of supply for a given raw material.

For raw materials determined to be high-risk, mitigation plans are developed and implemented. Mitigation can involve actions ranging from the recruitment of new suppliers to conducting supplier visits to gain a more in-depth understanding of the risks. See our website for more details on this assessment.

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[8] Life Cycle Assessment (LCA) is peer reviewed according to ISO 14040/44 standards for Corbion's core products (such as lactic acid) or done according to the "LCA Approach for Corbion's Product Portfolio: Lactic acid derivative plants, Corbion 2017," which has been externally reviewed against and is considered to be in line with the principles of the ISO 14040/44 standards. Applies to products manufactured at Corbion sites (outsourcing is excluded). By quantity.

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Supplier code

Corbion's supplier code defines what we expect of our suppliers in regards to our responsible sourcing commitment. The code outlines principles and criteria concerning business ethics, human rights, acceptable labor conditions and environmental practices. It also includes core principles from the OECD Guidelines for Multinational Enterprises and the eight fundamental Conventions defined by the International Labour Organisation, including freedom of association and the effective recognition of the right to collective bargaining, the elimination of all forms of forced or compulsory labor, the effective abolition of child labor, and the elimination of discrimination in respect to employment and occupation. We require our suppliers to sign our supplier code as a pledge of compliance. Suspected non-compliance with any of the codes will be investigated and discussed with the supplier. If deemed necessary, the supplier is expected to implement a corrective action plan that will effectively and promptly resolve the issue, according to an agreed timeline. Should issues persist, Corbion may ultimately decide to terminate the relationship with the supplier.

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Biobased raw materials

The majority of our raw materials are biobased, derived from renewable, agricultural sources such as sugar cane, corn, soy, wheat, and palm oil. The use of biobased raw materials instead of fossilbased resources for the production of specialty chemicals supports the transition to a circular economy, because biobased raw materials are renewable by nature, in so long as its production is sustainably managed. According to the Bioplastic feedstock alliance, a sustainable biobased feedstock is legally sourced, conforms to Universal Declaration of Human Rights (UDHR), does not adversely impact food security, and does not result in deforestation. Corbion's sustainable agriculture policy describes our key principles for the production of biobased raw materials.

Our biobased raw materials KPI measures the % of our raw materials that is biobased (based on biobased carbon content) excluding inorganic raw materials.

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12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Preserving the planet

- Preserving natural resources with biodegradable alternatives
- Preserving the climate with biobased alternatives
- Preserving natural resources with gypsum-free technology for lactic acid
- Preserving natural resources with alternative feedstock technology
- Preserving human rights and the environment through responsible sourcing
- Preserving the climate by working toward carbon neutral operations

KPI	2030 Target[1]	2025 Target[1]	2020	2019[2]
% of raw materials covered by generic supplier code[3]	> 90%	> 90%	99%	100%
% of raw material/supplier combinations with high sustainability risk[4,5]	< 10%	< 10%	10%	n/a
% of high risk raw materials/supplier combinations with mitigation plan[4,5]	> 90%	> 90%	96%	n/a
% biobased raw materials[3]	> 95%	> 95%	98%	98%
Renewable electricity	100%	90%	71%	58%
Reduction of Scope I, II emissions[6]	-	-	23%	21%
Reduction of Scope I, II, III emissions (SBTi approved target)[6]	33%	20%	11%	12%
% recycled by-products[3]	100%	100%	98%	99%
Landfill of waste	0	-	1.8 kT	1.2 kT
% of products sold contributing to preserving the planet[7] covered by LCA[5,8]	100%	100%	80%	n/a

Renewable electricity

To demonstrate our commitment to renewables, and to further our transition to renewable electricity, Corbion has joined RE100. RE100 is a collaborative, global initiative uniting more than 100 influential businesses committed to 100% renewable electricity and working to dramatically increase demand for—and delivery of—renewable energy. Corbion aims to be 100% powered by renewable electricity by 2030. To achieve this goal, we combine on-site generation with the purchase of renewable electricity from our suppliers.

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Corbion's carbon footprint reduction a science-based approach

Corbion has committed to reducing our CO_2 emissions related to energy, key raw materials, and transport by 33% per ton of product by 2030 from a 2016 base year.
This target has been approved by the Science Based Targets initiative. To fulfill this pledge, we have developed a roadmap, including the following actions, some of which are already in motion.

- transition to 100% renewable electricity by 2030
- implement energy-saving projects in our manufacturing sites
- select the most energy-efficient technology available when equipment is replaced
- establish an R&D program to identify opportunities for heat integration, electrification, and recycling
- partner with key raw material suppliers to jointly reduce CO_2 emissions

"To be a true leader in the circular economy, we need to lead by example and do our part to achieve the Paris Agreement."
Olivier Rigaud, CEO

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Zero waste

Our “zero waste” ambition focuses on the reduction of waste by valorizing all Corbion by-products by 2025 and eliminating landfill contributions altogether by 2030. In this way, we maximize the value generated from the resources we consume and take steps away from a linear economy based on a “take-make-dispose” system toward a circular economy.

Through lactic acid production, Corbion generates significant quantities of valuable by-products such as gypsum. Every ton of lactic acid produced is accompanied by almost 2 tons of by-product. While most of these by-products are valorized, some quantity does occasionally go to a landfill. To eliminate this waste, we are developing new outlets and implementing a gypsum-free production process in our future lactic acid plants.

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Life Cycle Assessment

Corbion uses Life Cycle Assessments (LCA) as a tool for understanding the environmental impacts associated with a product, from the extraction of resources, through processing and manufacturing, distribution, use and end of life. To enable our customers to make conscious choices, we will conduct cradle-to-gate LCAs for all products that can contribute to preserving the planet by 2025. Using this data, we can work side-by-side with customers on improving their environmental footprint and on substantiating their sustainability claims.

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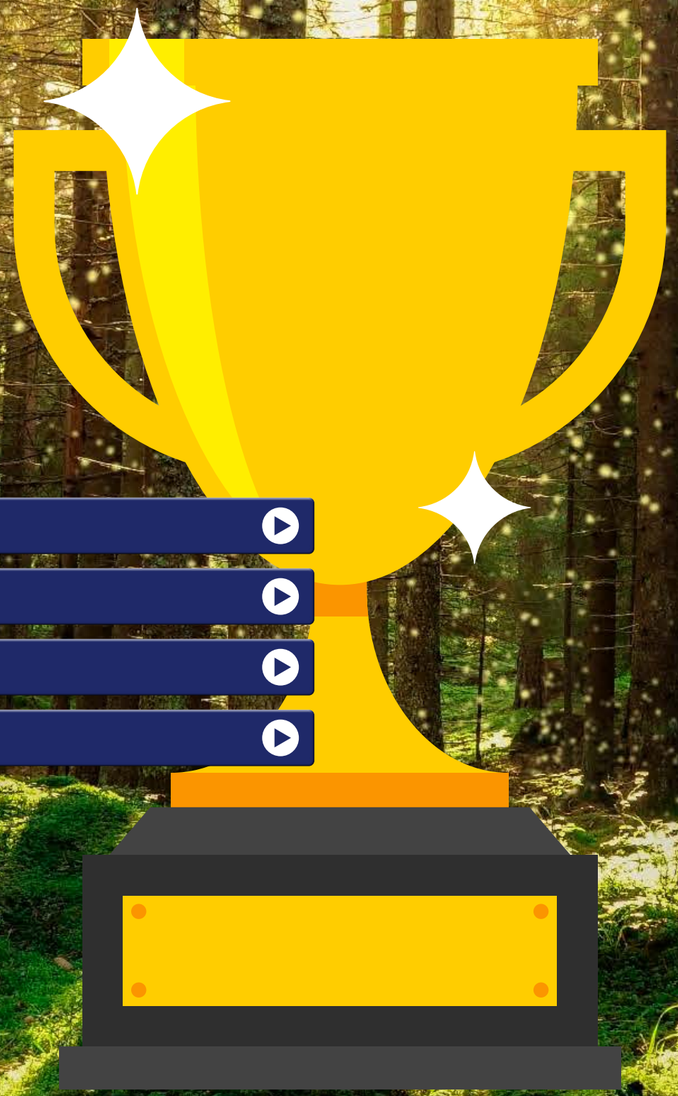
Awards & ratings



- Ecovadis Platinum Sustainability Rating
- Ecovadis performance overview
- CDP Supplier engagement
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Ecovadis Platinum Sustainability Rating

Corbion in **top 1% of all suppliers** in our sector assessed worldwide!

Aware for continuing improvements across all assessed themes:

- ✔ Fair business practices
- ✔ Sustainable procurement
- ✔ Labor practices
- ✔ The environment

"The Ecovadis recognition supports our entire business strategy to preserve what matters."
Marcel Wubbolts, CSSO

Independent review, by Ecovadis

Awards & ratings

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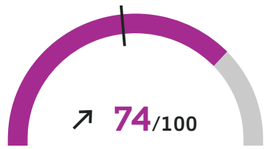
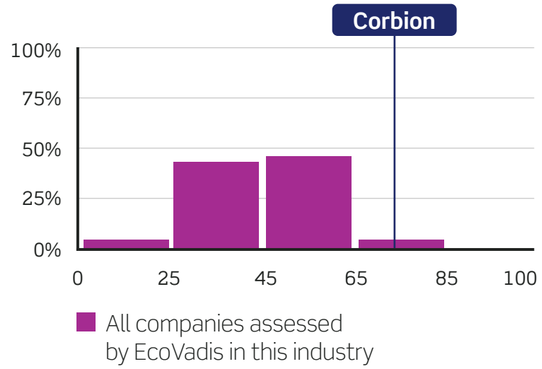
Ecovadis performance overview

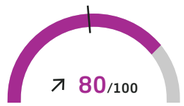
Overall score



99th percentile

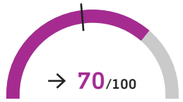


Environment



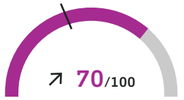
Weight ●●●●

Labor & human rights



Weight ●●●●

Ethics



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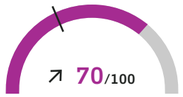
Sustainable procurement



Weight ●●○○

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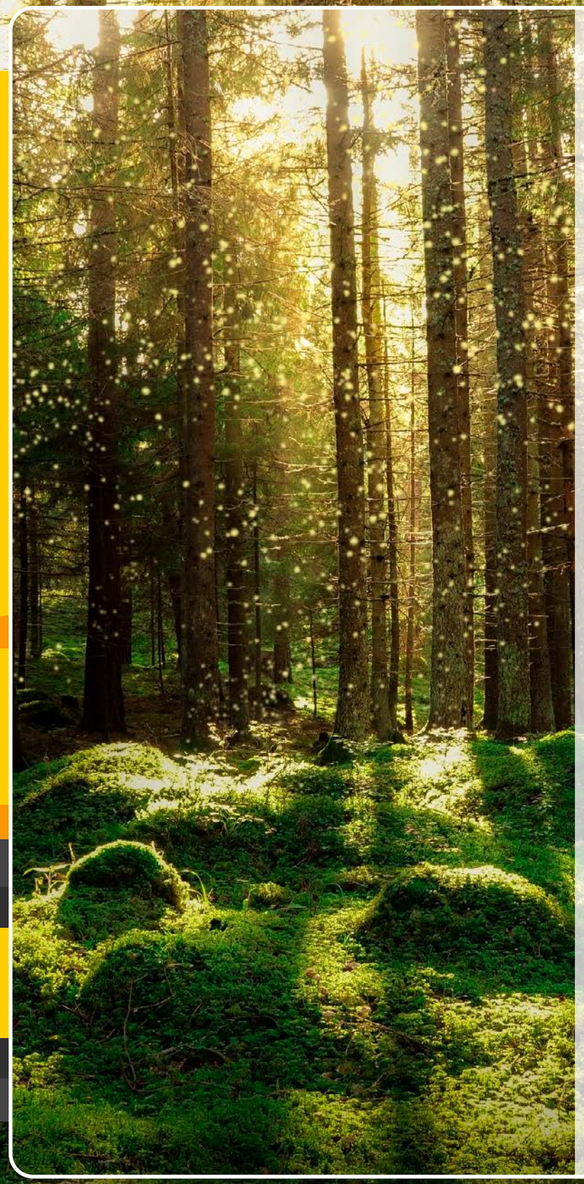

Climate Change & Supplier Engagement rating

We report our climate actions to the Carbon Disclosure Project (CDP)

Corbion has been recognized for leadership in corporate sustainability by global environmental non-profit CDP, securing a place on its prestigious 'A List' for tackling climate change.

- ✔ Climate change: **A score**
- ✔ Supplier engagement: **A score**

"At Corbion, addressing climate change is a business opportunity. With our sustainable ingredient solutions, we enable our customers to reduce their emissions. This CDP rating confirms we are on the right track."

Marcel Wubbolts, CSSO

CDP

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Forests Rating

We report our actions to protect Forests to the Carbon Disclosure Project (CDP)

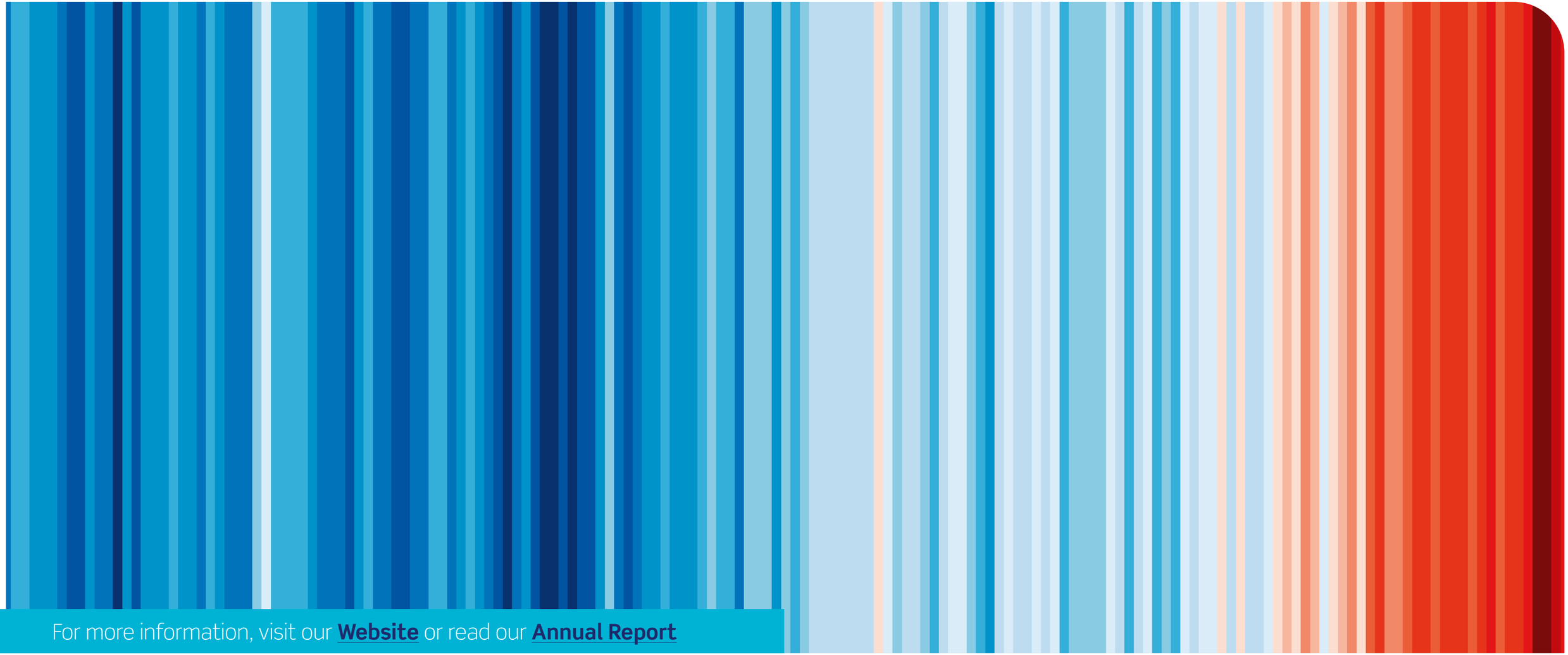
We achieved an above average ratings for palm oil:

- ✔ Palm oil: **B score**
- ✔ Soy: **C score**

"A sustainable agricultural supply chain is essential for our business. At Corbion we partner with our suppliers to promote sustainable agriculture and protect forests."

Belinda Roberts, VP Procurement Corbion

CDP



For more information, visit our **Website** or read our **Annual Report**

Corbion

Keep creating