



**Bioindustrial  
Solutions  
Sustainability  
Report 2020**

## Bringing Bioindustrial solutions to life

We take nature-derived ingredients – such as corn, soybeans, jojoba and seaweed – and transform them into bio-based solutions that offer planet-friendly alternatives to fossil-based products. [Watch this video](#) to learn more about how our plant-based solutions are transforming a wide range of beauty products and industrial applications.



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# To our stakeholders



Welcome to Cargill Bioindustrial's first sustainability report. This report is an important step in our commitment to transparency, providing our customers – and the consumers who use their products – greater insight into how we deliver our solutions and the resulting impact on environmental and social aspects of sustainability.

Cargill Bioindustrial became a distinct business group within Cargill in June 2018, but we have been developing bioindustrial products since the 1950s when we refined linseed oil and soybean oil for use in paints and coatings. Today we create solutions that renew old asphalt for roads, insulate transformers, burn clean candles, moisturize the skin, create biodegradable, compostable beverage containers and much more. In December 2020, we expanded our beauty business with the acquisition of Floratech, a leading specialty beauty ingredient supplier.

True to our spirit of innovation, we completed the Floratech acquisition almost entirely virtually to ensure employee safety in the midst of the COVID-19 pandemic. We responded to the challenges of COVID-19 with proactive measures to protect employee health while continuing to deliver for our customers. [Learn more](#) about how we prioritize safety.

Sustainability is inherent in our value proposition and our plans for growing the business. We are continually finding new ways to serve industrial and consumer markets using renewable, bio-based feedstocks processed into a variety of intermediate and end-use applications that help manufacturers improve the performance and sustainability of their products.

**Colleen May**  
President  
Cargill Bioindustrial



Sustainability is at the core of everything we do. In this report, we share information about our bio-based products, the feedstocks we use to make them and how we produce them in a sustainable manner.

Our solutions are created using renewable feedstocks ranging from large-scale row crops like corn and soybeans to smaller scale specialty ingredients, such as jojoba and red seaweed. Each year – and in some cases more frequently – these feedstocks are regenerated and can be harvested again.

Products made with renewable feedstocks have significant environmental advantages compared with fossil-fuel based products – but that's only part of our sustainability story. In this report, we provide insights into how our bio-based solutions measure up in important ways, including levels of greenhouse gas (GHG) emissions, energy use and water consumption. This focus on transparency helps our customers understand the impact of using our bio-based solutions compared with petroleum-based alternatives. We perform lifecycle assessments and share those details with our customers so they can calculate the resulting impact on their own environmental footprint.

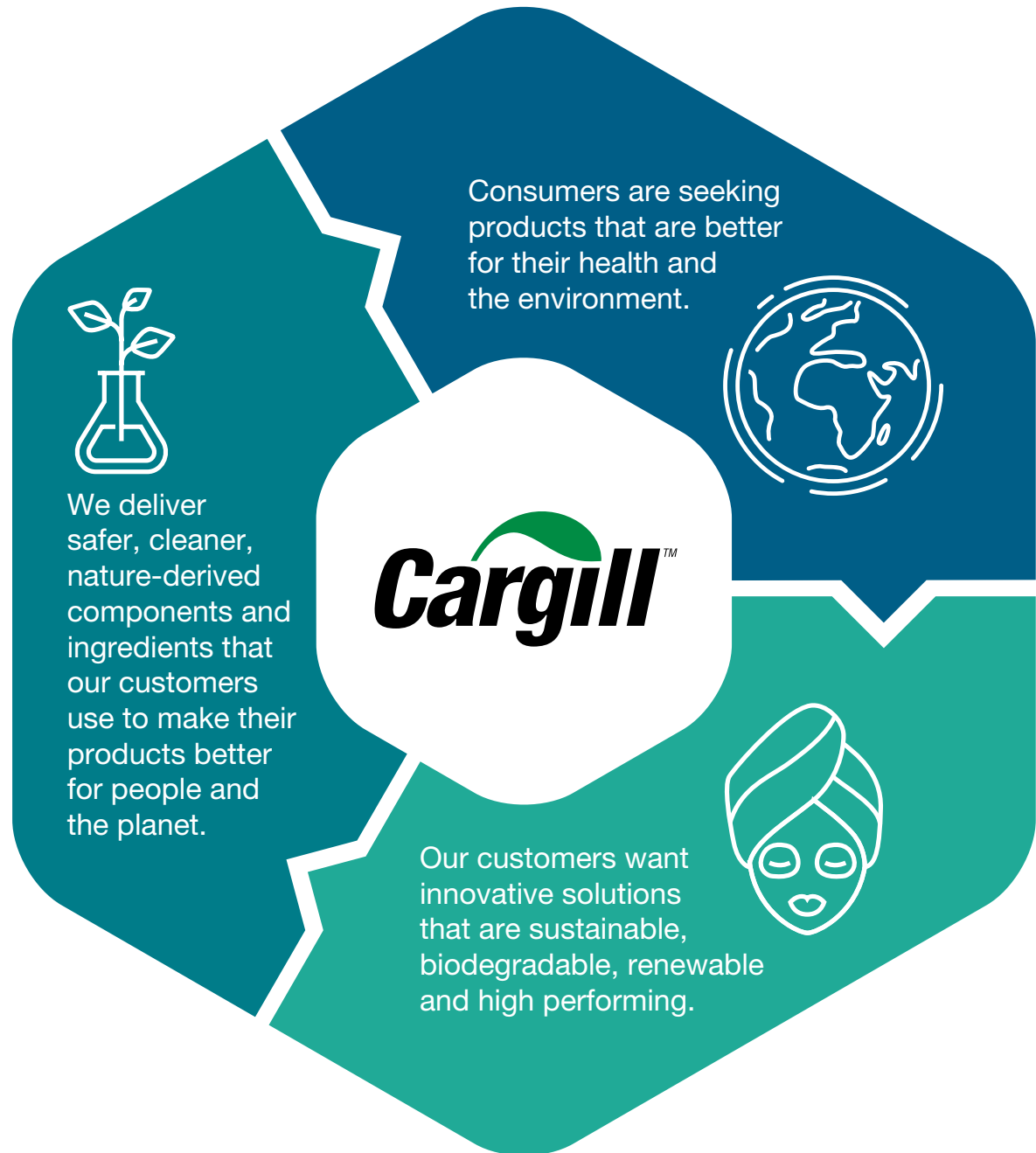
In addition to being better for the planet, bio-based products are good for people. Giving farmers another viable market for their crops helps improve farmer livelihoods. Feedstock production contributes to farmer prosperity and development in rural communities around the world. Our products that replace dangerous chemicals, like formaldehyde resins used in plywood, with bio-based ingredients also enable healthier lives.

We help customers deliver safer, cleaner, nature-derived components and ingredients for the products their consumers want. Through innovation, we continue to improve the sustainability of our solutions and shape our offerings with an eye toward circularity – finding new ways to repurpose and reuse materials for a better environmental outcome.

**Marty Muenzmaier**  
Sustainability &  
External Affairs Lead  
Cargill Bioindustrial

# Sustainable products

Consumers want to know more about what's around them in the homes and buildings where they live, work, study and recreate as well as what they're putting on themselves – in the skincare, haircare and oral care products they use. Our customers want to reduce the environmental impact of their products in measurable ways and comply with regulations preventing use of toxic substances. Cargill's bioindustrial products help our customers meet rising demand for more sustainable offerings.



## Sustainable products

Our bio-based solutions made with renewable materials are more sustainable alternatives to products created using fossil-based substances that contribute to greenhouse gas (GHG) emissions and harmful chemicals that negatively affect people's health. Our customers use our bio-based solutions to make their products more flexible, durable, long-lasting, absorbent, biodegradable and reusable. We start with natural ingredients, like corn and soy, and turn them into components that take the place of petroleum, certain solvents and hazardous chemicals, like formaldehyde and phthalates that can cause serious negative health effects among people who are exposed to them.

# Cargill Bioindustrial markets and applications

## INDUSTRIAL



### Building materials

- Binders and adhesives
- Foams and flooring



### Biochem specialties

- Wax
- Polyols
- Plasticizers



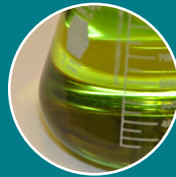
### Road construction

- Asphalt solutions



### Performance chemicals

- Paints, inks and coatings
- Lubricants, oilfield and tires
- Agriculture, food and feed
- Glycerin



### Power generation

- Dielectric and cooling solutions

## CONSUMER



### Beauty

- Haircare
- Skincare and cosmetics
- Oral care

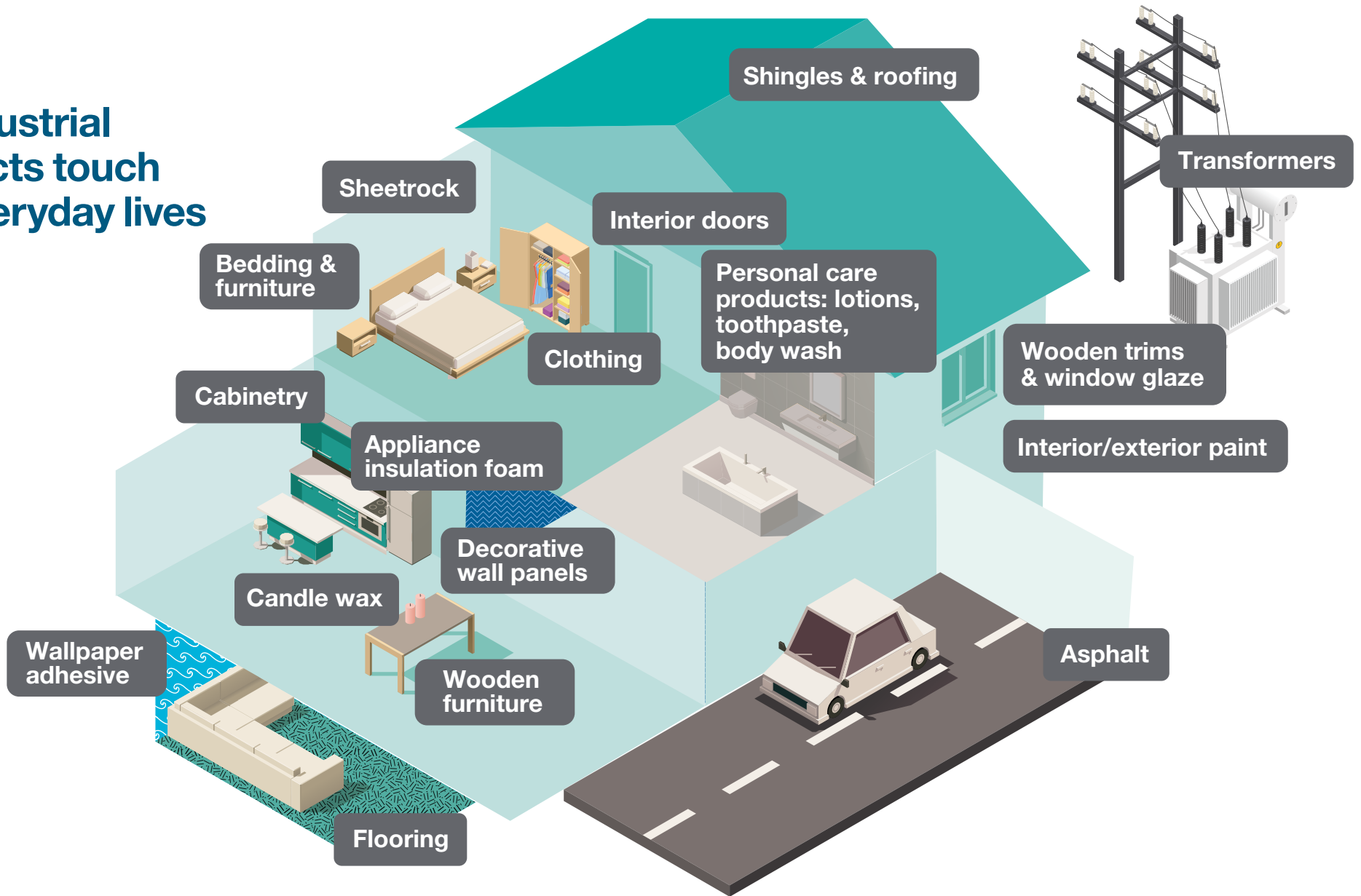
## BIO-INTERMEDIATES



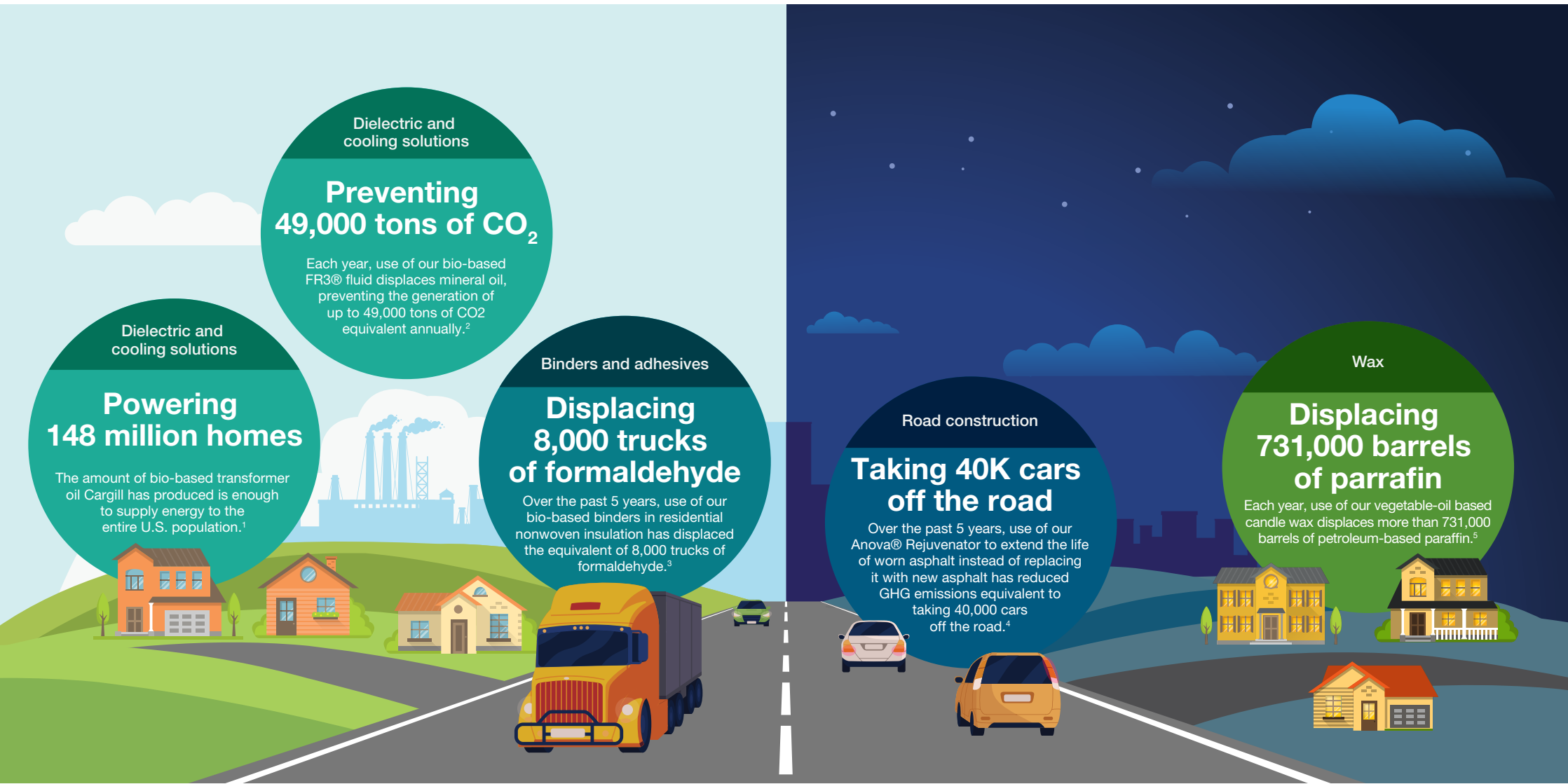
### Bio-based chemical intermediates

- Apparel
- Packaging
- Absorbent hygiene

## Bioindustrial products touch our everyday lives



# Impact of Cargill Bioindustrial solutions



1 Cumulative impact of FR3® production, if entire volume was used for transformers powering U.S. residential customers (148 million homes).  
2 Based on internal impact assessments and calculations.  
3 Since 2017, based on internal calculations.  
4 Source: NAPA Asphalt Pavement Industry Survey on Recycled Materials and Warm Mix Usage, 2019.  
5 Based on internal calculations.

## Industrial products

We provide a range of nature-derived offerings – including base chemistries, specialized products and fully customized solutions – that help solve our customers’ toughest industrial application challenges without the use of harmful or toxic ingredients. We continually look for new ways to replace petroleum-based products with more sustainable bio-based products that work better.

Featured here are a few examples of how our products make a sustainable difference for customers across a range of applications and industries.

### Dielectric and cooling solutions

Utilities have traditionally used mineral oil as an insulating fluid in electrical transformers. We created a biodegradable alternative from vegetable oil, called FR3®, which is more efficient than mineral oil, lasts longer, reduces fire risk and reduces environmental problems from spills. Our customers around the world are transitioning to FR3 dielectric fluid to meet energy demands, improve safety and reduce environmental risk.



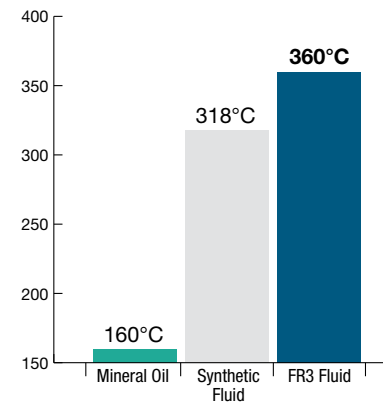
This floating photovoltaic power plant in Bahia, Brazil is filled with 2,500 liters of FR3® insulating vegetable oil and has the capacity to generate one megawatt-peak (MWp) of energy.

#### Floating solar panels

Utilities are generating power with less environmental impact by building floating photovoltaic power plants to transform sunlight into electrical energy. Our customers around the world are installing these floating solar panels with FR3 fluid, a dielectric refrigerant with a natural ester base formulated for use in distribution and power transformers. In addition to better environmental and safety performance, FR3 fluid provides greater charge capacity and prolongs the life of the transformer.



Flash and fire point of dielectric fluids (°C)



FR3 fluid’s flash and fire points are more than twice those of mineral oil transformer fluid, helping drastically reduce fire hazard and keeping people safe, especially in densely populated areas.



## Industrial products

### Binders and adhesives

Our adhesive innovations deliver bonding strength from renewable resources, such as corn and soybeans, for applications ranging from paper bags to corrugated board, wallpaper, lamination, pharmaceutical preparations, furniture and plywood.

#### Formaldehyde-free resins

By replacing formaldehyde-based resins in plywood, paneling and particleboard with Cargill's Prolia™ soy flour adhesive, our customers can make their products safer and more sustainable. In addition to being nontoxic, soy flour requires less drying time, uses less water and produces less waste than conventional plywood glues.

### Road construction

Asphalt manufacturers, municipal transportation agencies, refineries and terminals use our bio-based products – including asphalt rejuvenators and warm mix, cold mix and anti-strip additives – to make safer, longer-lasting roads in a resource-efficient manner. For example, our bio-based, nontoxic warm mix additives help customers reduce fuel usage and enable their crews to reliably achieve density at lower temperatures while decreasing emissions and odor, benefiting workers and surrounding communities.



#### Rejuvenating old asphalt

Whether it's the punishing combination of desert temperatures and heavy traffic or the expansion and contraction that comes with freezing and thawing, pavements continually oxidize and age, causing cracking and rutting. We developed a vegetable oil-based additive, called [Anova® Rejuvenator](#), that makes used asphalt more pliable, reversing the impact of aging. Mixing Anova Rejuvenator with pulverized old asphalt makes it look and function like new. Benefits include improved cracking resistance, safer handling than petroleum-based bitumen rejuvenators and reduced volatile organic compounds (VOCs).

**100%** Using Anova® Rejuvenator, customers can build and maintain roads with up to 100% recycled asphalt pavement – reusing resources and extending the lifespan of roads.

## Industrial products

### Waxes

We refine, modify and blend vegetable oils to create waxes with a wide range of melting points, crystallization behaviors, colors and textures for residential and industrial use.



#### Lighting spaces with a natural glow

Our vegetable-based [NatureWax®](#) helps customers create innovative products with fewer petroleum-based ingredients to meet consumer demand for naturally generated ambiance.

#### Bio-based coating and lubrication

Our [Agri-pure™](#) industrial vegetable waxes can be used in place of some fossil-fuel based ingredients while optimizing properties such as melting point, flexibility, viscosity and hardness in everything from adhesives, lubricants and binders to coatings for paper, textiles, wood, boards and more.

### Polyols

Cargill [BiOH® polyols](#) are soy-based ingredients for polyurethane products, including foams for furniture, mattresses, pillows, carpets, appliances and automotive seats. These bio-based products replace a portion of petroleum-based polyols, offering a more sustainable and consistently comfortable solution.



#### Consistent cushioning and comfort

Our innovative load bearing foams and memory foams are low in VOCs and provide softer, more consistent cushioning at a wider range of temperatures for bedding and flooring, including at lower room temperatures. Memory foam mattresses made with BiOH polyols also have better heat dissipation – cooling 30% faster than gel memory foams – providing a cooler sleeping experience.

**61%** Use of BiOH® polyols in polyurethane foam can reduce energy use by 61% and lower GHG emissions by 36%.

## Consumer products

Cargill Beauty, the personal care category of Cargill Bioindustrial, offers a diverse portfolio of nature-derived ingredients, an integrated and responsible supply chain, and state-of-the-art research and application services to support the sustainable growth of our customers' personal care brands.

**Our portfolio includes texturizers, emollients, emulsifiers, sensory enhancers and bio-actives that are used to develop products for skin care, hair care, color care and oral care. Through our Cargill Beauty Promise, we are unleashing nature sustainably.**



### Texturizers

We use a variety of natural ingredients – including starches extracted from corn, carrageenans extracted from red seaweed, fermented sugars and citrus peel fiber – to create thickening and gelling agents that our customers incorporate into a broad range of personal care applications.



### Seaweed-derived skincare products

As consumers seek more skincare and haircare products made from botanical sources, our customers are replacing ingredients like silicone with our texturizers made with carrageenans derived from red seaweed. For example, Satiagum™ is used as a thickener to improve the glide of emulsions in face serum and toners, while Satiagel™ is a transparent gelling agent used as a texturizer in body cream, aftershave lotion, face masks and massage gel.

## Broadening our ingredient portfolio

In response to growing consumer preferences for nature-derived and more sustainably sourced ingredients, Cargill acquired Floratech in December 2020, bringing together Cargill's global supply chain, commercial capabilities and more than 40 years of experience producing ingredients for the beauty industry with Floratech's research abilities and specialty ingredients portfolio, including 45 years of market-leading expertise in natural emollients and jojoba derivatives. The combination provides beauty and skincare customers around the world access to the industry's broadest portfolio of more sustainable, nature-derived ingredients.

**“The addition of Floratech’s expertise in specialty beauty ingredients is an exciting step for our Beauty business. Our combined capabilities will be essential to delivering new, innovative and more sustainable beauty solutions to our customers.”**

— **Bente Korsgaard Andersen**  
*Managing Director*  
Cargill Beauty



## Cargill Beauty Promise

The Cargill Beauty Promise is our commitment to be sustainable by nature, respectful and transparent. This commitment reflects our core strengths today and our strategic aspirations going forward.

### Sustainable by nature

**In the botanicals we source:** We leverage Cargill's strong supply chain sustainability programs and utilize specialty ingredients to provide customers with sustainability solutions.

**In the ingredients we sell:** We provide “nature-derived” and “biodegradable” solutions to meet industry standards for these categories and replace fossil-based products.

### Respectful

**Of people and the planet:** We conduct business in a way that respects people across our supply chains and the environments where they live.

**Of communities, suppliers and employees:** We help build strong communities through the jobs we create in our facilities and the crops we purchase.

**Of those who use our products:** We provide product solutions that focus on consumer health, well-being and circularity.

### Transparent

**About our supply chain:** For many of our ingredients, we are mapping our sourcing locations, tracking product movement along our value chain and ensuring third-party certifications are maintained with integrity.

**About our production methods:** We collaborate closely with Cargill manufacturing facilities to ensure product quality and disclose information to stakeholders.

**About our impact:** We will share information with customers on the impact of our products and measure that impact through lifecycle assessments.

## Pliability and elasticity

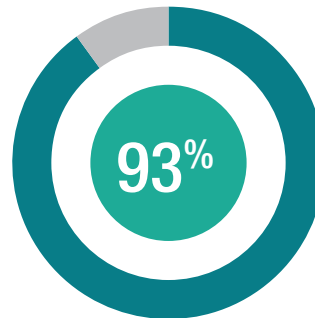


We continually look for new ways to replace fossil-fuel-derived ingredients with chemical compounds made from renewable feedstocks that perform as well or better. QIRA™ is a great example – this corn-based butanediol (BDO) can help make synthetic materials more durable and impact resistant, thereby increasing longevity, and can be used in a variety of industries to lower a product’s carbon footprint by as much as 93%. QIRA is a new brand introduced by Qore, a joint venture bringing together the agriculture and manufacturing expertise of Cargill with the distribution strength of HELM, to deliver a variety of applications, such as spandex fibers, bioplastics and polyurethanes, more sustainably. [Learn more.](#)

## Bio-intermediates

Our bio-intermediates business targets key steps within a chemical process to help deliver desired attributes, like absorbency and elasticity, using nature-based ingredients to replace fossil fuel-based ingredients. Applications utilizing chemistries, such as acrylic acid, for conversion into various materials is one example. Apparel, packaging and hygiene are all markets where we see opportunities for bio-intermediate solutions.

## Greenhouse gas reduction



## QIRA MARKETS AND APPLICATIONS

FASHION	Apparel and footwear
AUTOMOTIVE	Seating, airbags, doors, hosting, films
ELECTRONICS	Wristbands, cable insulations, phone cases, electronic adaptors
PACKAGING	Food packaging, coffee capsules, foodservice ware



# Sustainable feedstocks

We use regenerative feedstocks to create our bio-based products. These feedstocks are renewed each year – and in some cases more frequently. We process a wide range of agricultural commodities and specialty ingredients, including co-product valorization to make productive use of all feedstock components, then transport them to our customers where they are made into products for industrial and consumer use.



Cocoa butter



Jojoba



Palm



Sunflowers



Coconut oil



Macadamia



Red seaweed



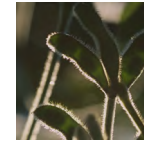
Tapioca



Corn



Moringa



Soybeans



Wheat



Industrial



Beauty



Bio-intermediates

## Sourcing region visibility

### Soy

Cargill sources soy primarily from North and South America. We are committed to more sustainable soy production, including protection of sensitive environments, reduction of GHG emissions and promotion of responsible working conditions as detailed in our [Policy on South American Soy](#). [Learn more](#) about our work to advance sustainable soy production.

### Corn

Cargill sources corn primarily from China, India, Europe, South America and the United States. We are working to increase transparency about where that corn comes from, how it is grown, and the environmental and social impacts of our corn supply chain and processing operations. Learn more about our [Waxy Corn Promise™](#) as an example of our commitment to more sustainable corn production.

### Palm oil

Cargill sources palm oil primarily from Asia and Latin America. We are committed to producing and sourcing palm oil in an economical, environmentally sustainable and socially responsible manner as detailed in our [Policy on Sustainable Palm Oil](#). We trace the palm oil in our supply chain back to the plantation where it was grown, support our suppliers in improving their practices and hold them accountable. [Learn more](#).

### Cocoa

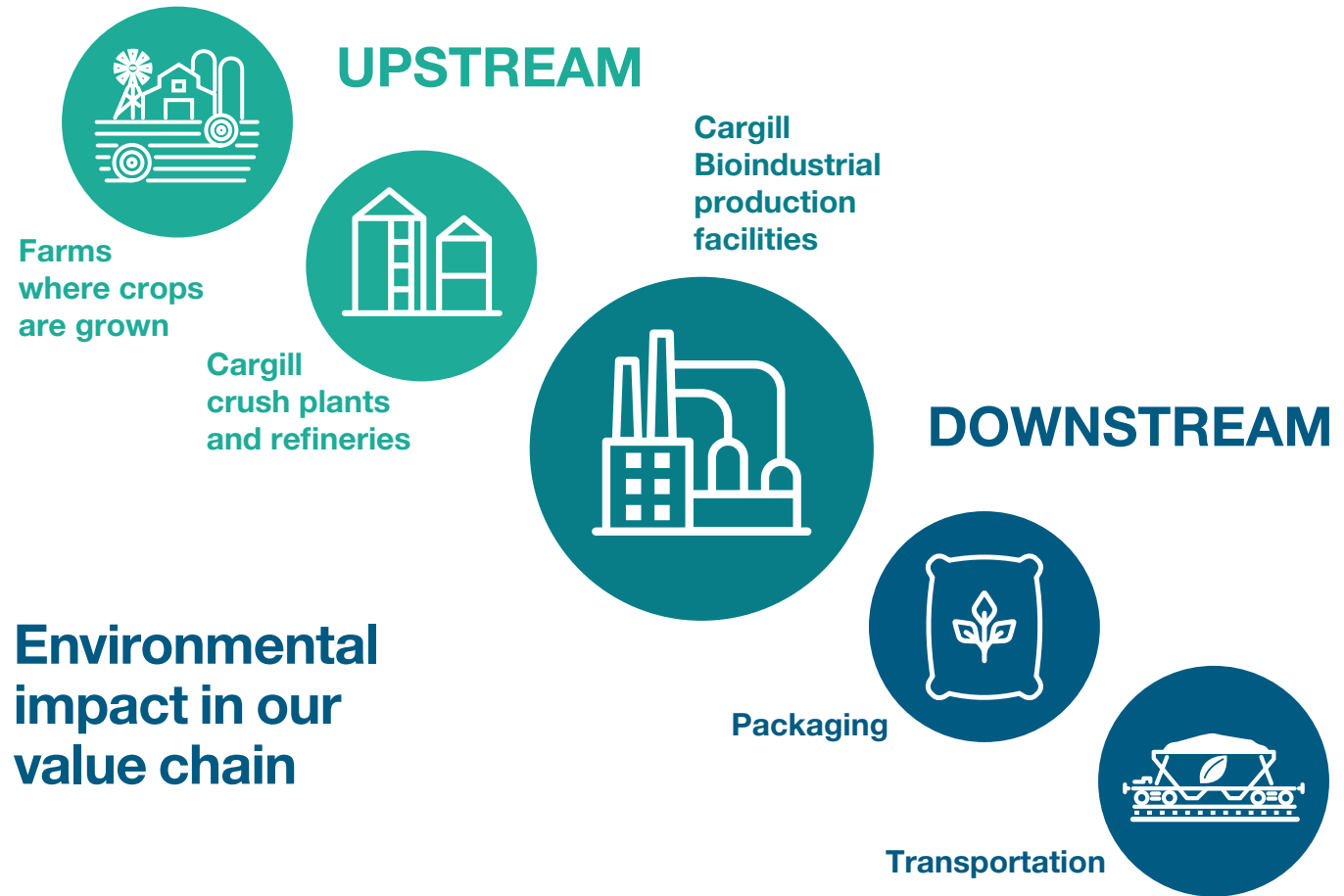
Cargill sources cocoa primarily from Brazil, Indonesia and West Africa (Cameroon, Ghana and Côte d'Ivoire). We map these supply chains and are working to achieve full traceability from farm to factory. Learn more about [The Cargill Cocoa Promise](#) – our commitment to enabling cocoa farmers and their communities to achieve prosperity, better living standards and incomes.

### Seaweed

Cargill sources seaweed from Madagascar and regions in Southeast Asia. Our [Red Seaweed Promise™](#) addresses sustainability challenges for the harvesting and cultivation of red seaweed, while enhancing producer livelihoods, supporting local communities and conserving the marine environment.

# Sustainable operations

We focus on operating our Bioindustrial production facilities as efficiently as possible. The majority of the environmental impact in our value chain occurs upstream, beginning on the farms where feedstocks are grown. The bulk of the work to process and refine agricultural feedstocks into the oils and starches we use is performed by other Cargill facilities (crush plants and refineries) that also serve Cargill's food, animal feed and biofuel businesses. Downstream in our value chain, there are environmental impacts related to product packaging and transportation.

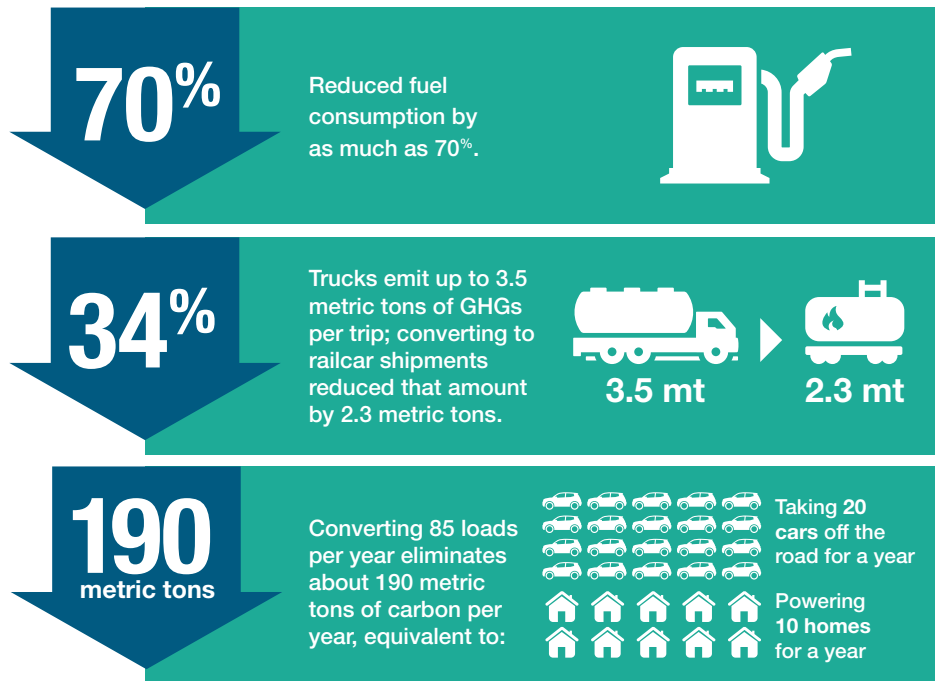


# Transporting products to customers

Within Cargill Bioindustrial, we continually look for ways to reduce our GHG emissions, energy use and resource use to contribute to Cargill's overall sustainability goals. Highlighted below are two examples of initiatives that are helping to limit our environmental impact.

## Transportation savings: Switching to rail

We needed a more efficient way to ship glycerin from Iowa to a toothpaste customer in New York. The trip takes four days and loads are sometimes idled due to customer demand issues, adding costs and GHG emissions from idling trucks, especially in winter. In 2020, we began shipping glycerin by railcar instead, with significant impact:



## Reducing packaging waste: On-site storage

We are always looking for ways we can reduce packaging throughout our supply chains. In India, we ship FR3 transformer fluid out of our Kurkumbh facility by truck in plastic industrial bulk containers (IBCs) that hold 1,000 liters but lack re-use opportunities. Our customers sometimes can use these IBCs for storage of FR3 onsite, but they are usually disposed of after being emptied and are difficult for us to retrieve. Working with several customers, the Kurkumbh team is designing a system to install permanent on-site storage at customer facilities, allowing us to ship new oil to them by truck tanker, fill the customer's storage tank and alleviate the use of plastic IBCs altogether. The impact of this change is a win-win-win for us, the customer and the environment:

Industrial bulk container



**16 tons**

Truck tanker



**25 tons**

vs.



## Savings at our headquarters

We know how effective our products are, so we use them at our own facilities to reduce Cargill's environmental footprint. Here are some examples of how we use our bioindustrial solutions at Cargill's corporate headquarters in Minnesota:



### Compostable cups

The cafeteria has compostable cups made with Ingeo® biopolymers, supplied by Cargill Bioindustrial joint venture NatureWorks LLC, that go into the Eco-Products® lining. Ingeo® biopolymers are created by fermenting sugars and have a 60% lower carbon footprint than plastics made from oil or natural gas. Learn more about [NatureWorks](#).



### Transformer fluid

Made using nature-derived, renewable oilseed crops instead of mineral oil, FR3 dielectric fluid used as a cooling agent in transformers supports the safety and reliability of energy generation at Cargill's global headquarters campus. FR3 fluid is made of vegetable oil that's 99% biodegradable, vastly reducing the risk that any potential leaks could damage the surrounding ecosystem.



### Recycled asphalt

The road leading to the Cargill headquarters campus was repaved using Anova® Rejuvenator, a renewable solution that extends the pavement lifecycle. The repaved road includes 45% recycled asphalt – more than double the industry's average recycled asphalt content rate of 22%.



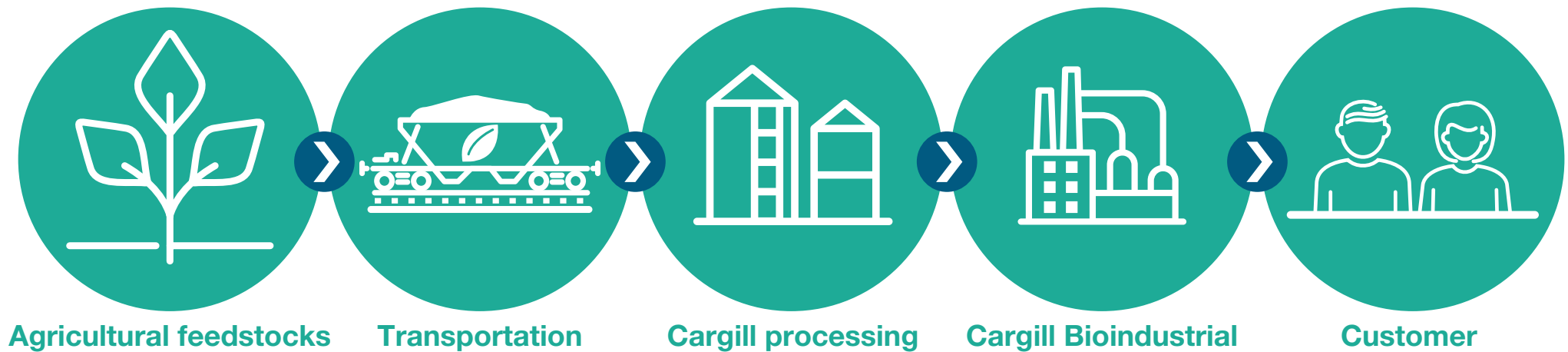
## Employee safety during COVID-19

Our company values – put people first, do the right thing and reach higher – have guided every decision we've made to keep our employees safe during COVID-19. We consult health experts and continuously implement new protocols to protect our employees from the community-wide impacts of the virus. Here are a few of the steps we have taken:

- Conducting temperature screening for employees and contractors entering our facilities
- Enforcing social distancing practices, installing barriers, implementing extra sanitation cycles and enhanced cleaning procedures
- Requiring masks and ensuring availability of personal protective equipment
- Remote working where possible and shift flexibility to keep our facilities open
- Requiring self-quarantine related to travel, symptoms or close contact with those who have symptoms or are positive
- Support from our health services teams to ensure safe and healthy return to work

# Transparency

We know that the production and use of our bio-based products results in fewer GHG emissions and lower resource use. We also understand that our customers don't just want to take our word for it. They need proof – the data that supports these savings, with the assurance of verified measurements and assessments – so they can count these savings toward their own carbon, energy and water reduction targets. To provide this documentation, we are conducting product lifecycle assessments and will share the results of these assessments with our customers.



# About Cargill

Our purpose is to  
nourish the world in  
a safe, responsible  
and sustainable way.

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We are  
**155K**  
employees

Working in  
**70**  
countries

With more than  
**155**  
years of  
experience

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Delivering for customers  
in more than  
**125**  
countries

We aim to be the most  
trusted partner for food,  
agriculture, financial and  
industrial customers.

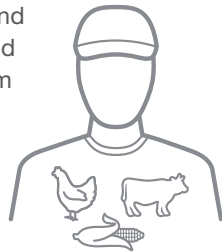


## Our business

Every day, we connect farmers with markets, customers with ingredients, and people and animals with the food they need to thrive.

### For farmers

We supply feeds, other inputs and expertise to farmers, and buy crops and livestock from them



### We provide insights to our partners



### We transform raw materials into finished goods



### For customers

We deliver finished goods to customers in the foodservice, retail, consumer packaged goods and industrial sectors



### We move products around the world



## How we work

Our integrated operating approach enables our businesses to provide industry-leading products and services in their specific sectors while also drawing on the full world of Cargill's expertise. We deliver this expertise locally, quickly and reliably through world-class capabilities and operations everywhere we do business.

Our global functions equip our businesses to do this effectively and efficiently by providing process governance and deep subject matter expertise on issues that affect us, our customers and other partners.

Cargill's Executive Team is responsible for the company's strategic direction, talent development and overall

financial performance. Led by Board Chair and CEO Dave MacLennan, members of the Executive Team represent all of Cargill's enterprises, as well as major global functions. They use a diverse set of experiences from both inside and outside of the company to lead and achieve results.

## Our Guiding Principles

Doing business ethically is key to our long-term strategy and relationships. Our seven Guiding Principles make up the core of our Code of Conduct. We require all employees and contractors to follow them, and expect our suppliers to do the same.

1. We obey the law.
2. We conduct our business with integrity.
3. We keep accurate and honest records.
4. We honor our business obligations.
5. We treat people with dignity and respect.
6. We protect Cargill's information, assets and interests.
7. We are committed to being a responsible global citizen.

## Our approach to sustainability and corporate responsibility

Our purpose is to nourish the world in a safe, responsible and sustainable way. It's who we are. It's why we exist. As the world faces extraordinary challenges – from climate change to food insecurity – delivering on our purpose is more critical than ever before.

Our global Sustainability strategy sets clear priorities based on the most material issues to our business. We identified Climate, Land & Water and People by evaluating the environmental, social and economic impacts of our diverse business and supply chains.

As we drive progress against these areas, we'll do so by engaging, empowering and advancing sustainable practices across farm and field, because we believe agriculture is how we'll deliver.

### **Agriculture is how we help people and the planet thrive.**

As the world joins in advancing the U.N. Sustainable Development Goals, we believe that many of the solutions to the challenges we're facing can be found in the very

place our food system begins: Agriculture. Agriculture can be a force for good. We aim to empower farmers and workers, support local communities, promote safe and fair working conditions and help ensure food is nutritious and plentiful for all. We're also driving progress on priorities that safeguard our planet and ensure we're operating our business in a sustainable way. Through our work with key partners, collaborative initiatives with our customers and through constantly innovating the products and services

that we offer, we are committed to creating impactful change that leverages our scale of operations and reach.

By empowering farming communities, protecting land and regenerating our soils, we'll nourish this growing population – safely, responsibly and sustainably.





**thrive**



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