



2020
SUSTAINABILITY
REPORT

Future- Thinking

Focused on sustainable, innovative solutions
for critical manufacturing challenges.

a brand of
FREUDENBERG

“We remain committed to making responsible choices for our environment while providing sustainable solutions to our customers and partners.”

CORPORATE STEERING COMMITTEE
Devanir Moraes, Justine Franchina, Chandler Smith

Table of Contents

4

Performance Recap and Goal Highlights

5

Creating Change: Our Progress

6

Leading the Way

7

Sustainability as a Common Language

8

2018-2020 Results: Emissions & Energy

14

2018-2020 Results: Water

20

2018-2020 Results: Materials & Waste

29

Looking Toward the Future

30

Next Generation, Now

32

Our People Make the Difference: Meet GSAT

CHEM-TREND SUSTAINABILITY PERFORMANCE RECAP & GOAL HIGHLIGHTS

REDUCE
greenhouse
gas emissions

15% BY 2023
25% BY 2025

[Read more →](#)



ENERGY



EMISSIONS



WATER

REDUCE
water
consumption
99%

BY 2025

[Read more →](#)

REDUCE
waste
generation

15%
BY 2023

[Read more →](#)



WASTE



MATERIALS

INCREASE
amount of
recycled
material by
weight to

9KGs BY 2025

[Read more →](#)

CREATING CHANGE: OUR PROGRESS




Emissions increased by
3%

BETWEEN 2016 & 2020

[Read more](#) →

[See page 38, to learn more about our emissions scores.](#)



Water usage reduced by
33%
BETWEEN 2016 & 2020

[Read more](#) →

WATER

This complex block features a dark blue header with a white icon of a water drop on a ripple. The main content area is white and contains the text 'Water usage reduced by 33% BETWEEN 2016 & 2020' in a large, bold, dark blue font. Below this is a 'Read more' link with a right-pointing arrow. The footer is a dark blue bar with the word 'WATER' in white capital letters.

Waste reduced by
19%
BETWEEN 2016 & 2020

[Read more](#) →

WASTE

This complex block features a dark blue header with a white icon of a recycling bin. The main content area is white and contains the text 'Waste reduced by 19% BETWEEN 2016 & 2020' in a large, bold, dark blue font. Below this is a 'Read more' link with a right-pointing arrow. The footer is a dark blue bar with the word 'WASTE' in white capital letters.

Materials recycled increased by
56%
BETWEEN 2016 & 2020

[Read more](#) →

MATERIALS

This complex block features a dark blue header with a white icon of a recycling symbol. The main content area is white and contains the text 'Materials recycled increased by 56% BETWEEN 2016 & 2020' in a large, bold, dark blue font. Below this is a 'Read more' link with a right-pointing arrow. The footer is a dark blue bar with the word 'MATERIALS' in white capital letters.

Leading the Way

“At Chem-Trend, our commitment to sustainability runs from executive leadership to workers on the shop floor — in every Chem-Trend facility around the world. It’s the responsibility of everyone in our organization to be stewards.”

MIKE WARD
Operations Director
North America
Global Sustainability Officer

At Chem-Trend, we share a cultural commitment to sustainability and believe that changes we make today will have a positive impact on tomorrow. We align with our parent company, Freudenberg Group, by defining total success as a combination of market and social impact gains. That means providing innovative, future-thinking solutions to help our customers continuously improve their manufacturing operations while also increasing efficiency and sustainability for their organizations and ours.

Upholding Freudenberg’s “We all take care” initiative, we pledge to improve our environmental protection, health, and occupational safety, and develop sustainable solutions to positively affect quality of life.

Taking the lead in helping us continue to grow our expertise and progress in this area is our Global Sustainability Advisory Team (GSAT). Composed of Chem-Trend team members representing our locations around the world, this group champions our sustainability efforts through research and actions. We look to them as resident experts to help move us forward.

In the following pages, you’ll meet the team and learn their perspectives and developments on how we’re continuing to evolve our practices. These innovations are informed by pressing global climate change issues, including depletion of natural resources like water, material waste generation, and the need for a transformative approach to recycling — all of which require forward-thinking solutions at every level of production, from research and development to the final product and disposal.

See more about the GSAT on [page 32](#).



TOGETHER, WE MAKE A POSITIVE IMPACT

Sustainability as a Common Language

Environmental responsibility happens with strong footprint (internal) and handprint (external) efforts. We continuously look to expand how we can make a direct positive sustainability impact on our own operations and how we can help make our customers' operations more environmentally conscious.



“Sustainability is a common language for us across regions. Our core value is how we communicate the sustainability of our product, globally. Every decision we make and action we take is purposeful with long-term results considered. Nothing is by accident, and it’s a combined focus for us all.”

ROBERT GONG
Senior Manager, HSE & Regulatory Compliance
Asia Pacific

“Strong and sustained reductions in emissions of carbon dioxide (CO₂) and other greenhouse gases would limit climate change.”

UN INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC)

2018-2020 RESULTS

Emissions & Energy



In the past two decades, there's been a 43 percent increase in worldwide greenhouse gas emissions. The recent landmark climate study from the IPCC estimates that human activity accounts for around 40 billion tonnes of CO₂ every year — and if current trends continue, temperatures will rise 1.5 degrees Celsius by mid 2034. The largest factor is energy production and use.

OUR GOALS

**Reduce our greenhouse gas emissions
15% by 2023, 25% by 2025**

OUR CALCULATIONS

Moving annual total (MAT) GHG emissions* (kg CO₂)

MAT production volume (liters) × 1000

Chem-Trend is not an overly energy-intensive operation, but opportunities to reduce electricity and natural gas usage exist within all of our sites. To achieve our goal of reducing our greenhouse gas emissions by 15% by 2023 and 25% by 2025, we enlist the efforts of our entire organization in every facility. We've found that changes large or incremental can make a significant impact on overall energy usage, and we are always looking for ways to conserve.

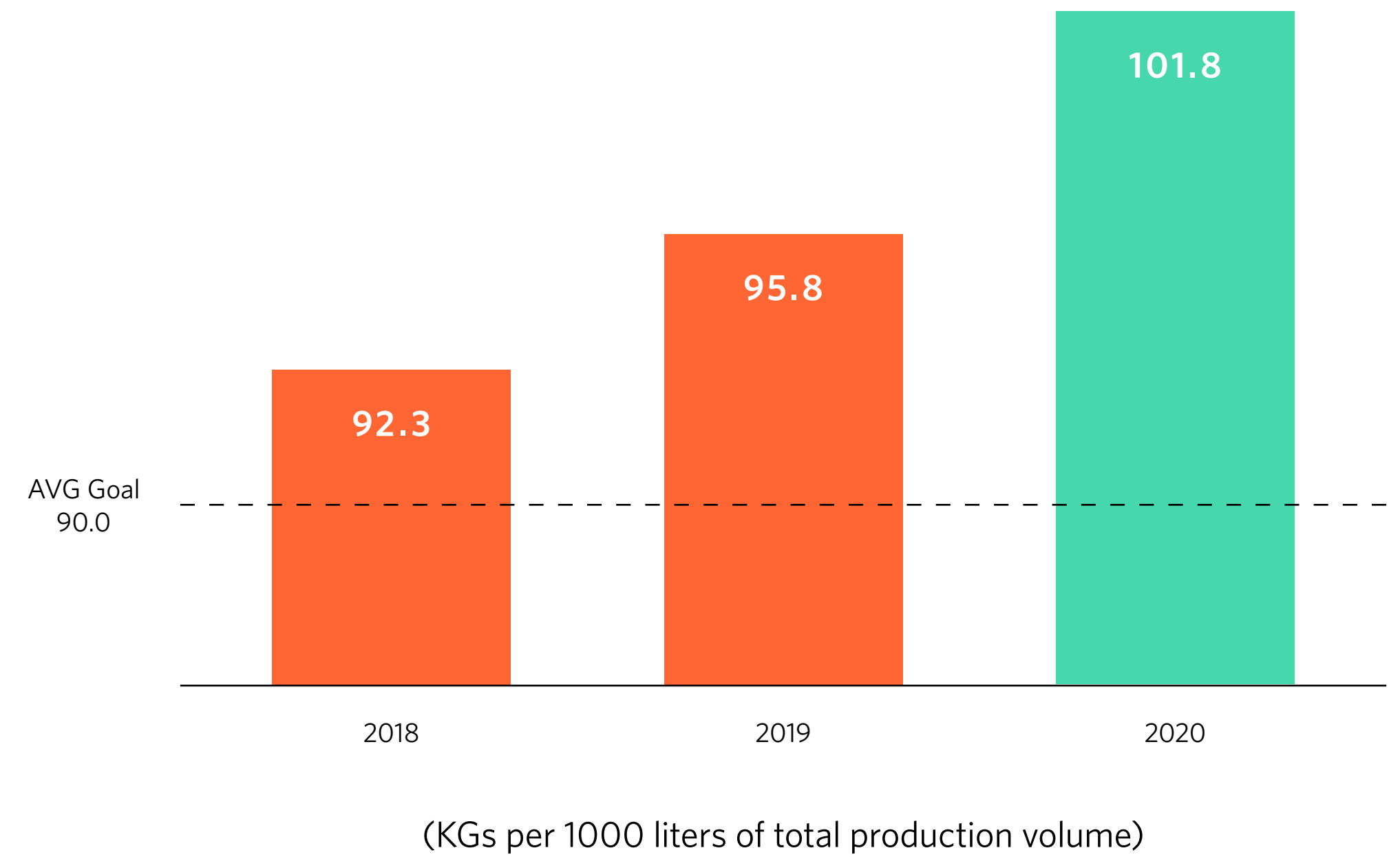
*GHG emissions for Chem-Trend LP manufacturing sites are calculated from the electricity and natural gas usage at production sites. For these sites, the electricity and gas usage is for the entire site including production, lab, warehouse, office buildings, exterior lighting, etc.



RESULTS

Global GHG (CO₂) Emissions in Relation to 2018-2020 Goal

Two prominent areas with the greatest potential for improving our footprint are energy efficiency and CO₂ emissions. To meet our goals, we have implemented initiatives, including regional MFG facility energy assessments, purchasing of green energy, waste and scrap reduction, and reduction in solvent-based products within our portfolio in favor of water-based technology.



CUSTOMER IMPACT
OUR HANDPRINT

Better products
increase efficiency.

“In general, we sell higher performing products than the competition. Our technologies like SprayIQ™ and DilutionIQ™ further empower operators to reduce use of energy and resources with data that helps them know how much product to apply, set limits, and monitor concentration levels. And this requires much less effort on the customer’s part than ever before, with fewer stoppages needed to test levels. The result is more uptime, more productivity, and peace of mind that they’re working at maximum efficiency.”

ROB CURTIS
Director of Global Engineering

Monitoring from
home base.

“We can monitor how much product our customers use from home base. If we detect issues, we’re able to get on the phone and help get them back to normal quickly. It doesn’t require us to be on the road or an airplane because our technologies allow us to be closely connected to their operations even from far away.”

MICHAEL TAMBASCO
Technology Leader, Die Cast
Global R&D





INTERNAL FOCUS
OUR FOOTPRINT

Shining the light
on energy use.

Small changes
equal big returns.

“As an operations manager, I have the job of decreasing energy and water use. One of our initiatives in Korea was switching to LED lights in the production building and warehouse to increase efficiency. This one initiative has the potential to decrease energy use by 30% to 50%.”

DONG KYU (DK) LEE
Operations Manager
Asia Pacific

“We have active internal energy assessments in play such as identifying and correcting for air leaks in manufacturing facilities and making our heating and cooling systems more efficient. Additionally, as more opportunities have become available, Chem-Trend is looking into the purchase of green energy.”

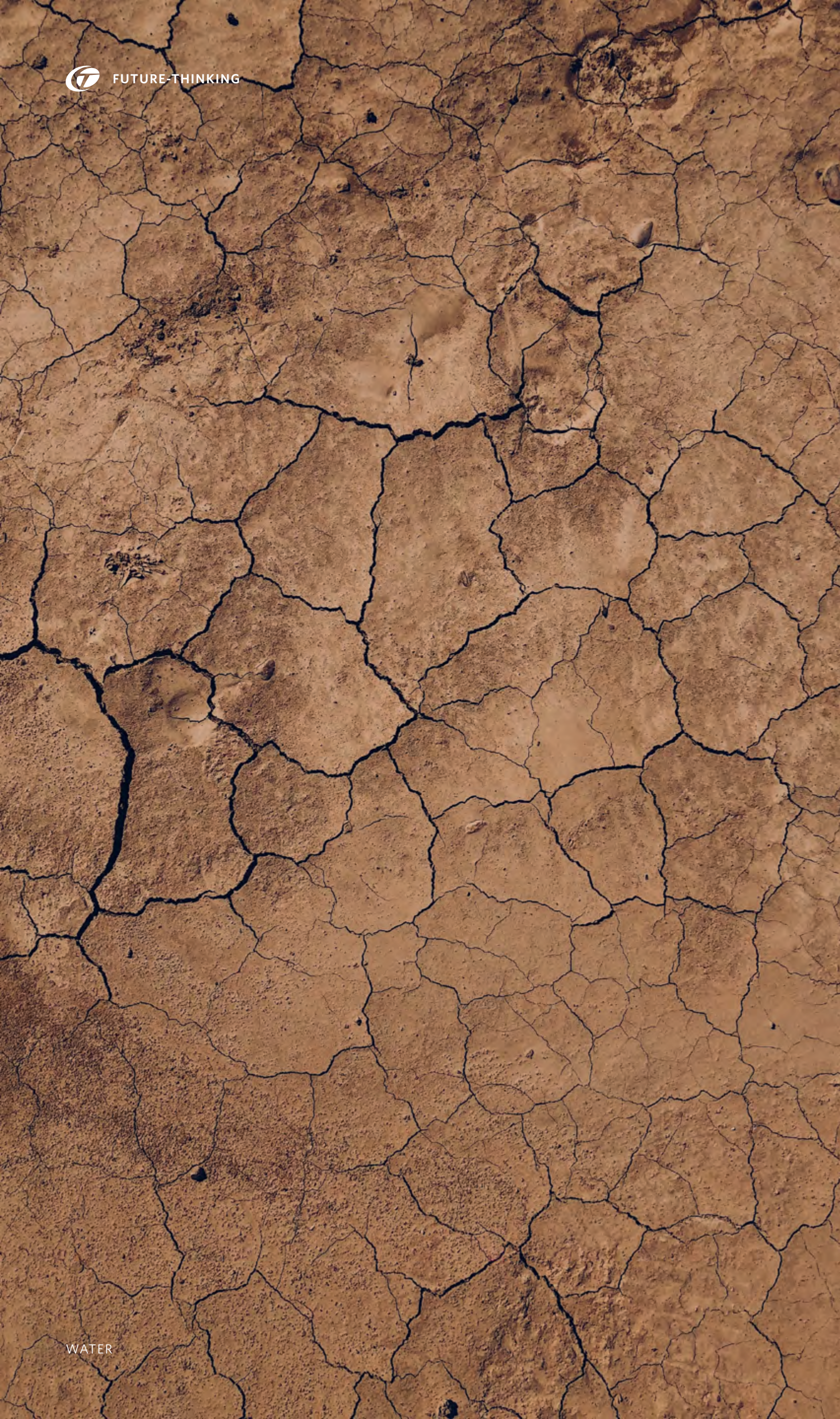
MIKE WARD
Operations Director
North America

“Water crises again ranked a top global risk
in World Economic Forum Report.”

CIRCLE OF BLUE (GLOBAL RISKS 2020: A YEAR OF RECKONING)

2018-2020 RESULTS

Water



Fresh water is becoming increasingly rare around the world. According to the World Wildlife Federation, water shortages may affect two thirds of the human population by 2025. Respondents to an annual World Economic Forum survey ranked water scarcity as a top risk to society in the next decade.

OUR GOALS

Reduce water consumption by 99% by 2025

OUR CALCULATIONS

Water usage excluding water used as a raw material in products* (liters) MAT

Production volume (liters) MAT × 100

With steady progress, we have been able to reduce this metric by 27% over the past five years. Our 2025 goal was set for a reduction of 99%, which is aggressive and achievable. Manufacturing more product volume than water consumption is an accomplishment we are actively striving to realize and moving closer to every day.

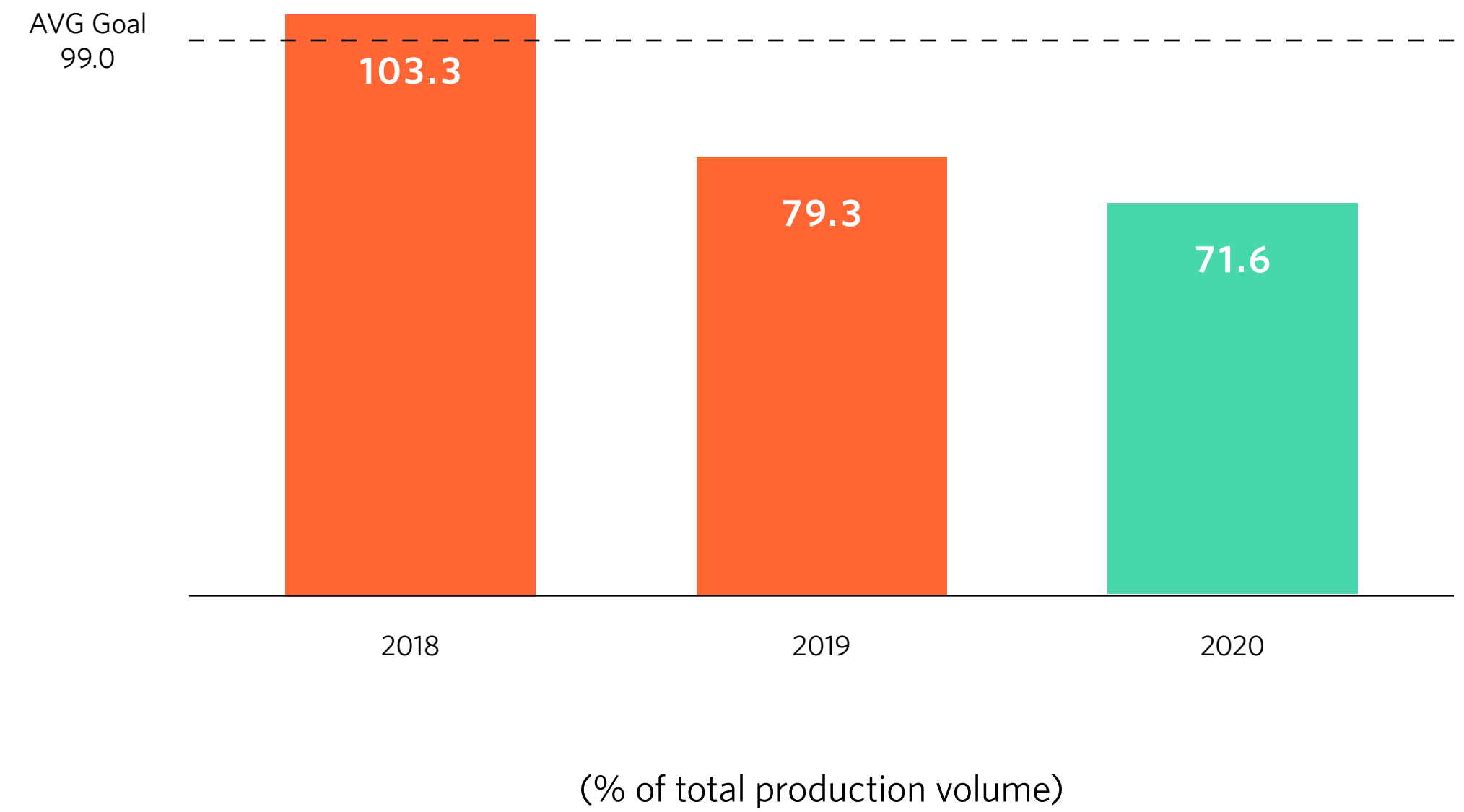
*Water for this metric includes all water (sanitary, drinking, cleaning, rinsing, cooking, cooling water, steam, water for gardens/lawns, etc.) used at the site except for water that is used as a raw material in a product. The amount of water used is measured in liters.



RESULTS

Global Water Usage in Relation to 2018-2020 Goal

Our global water use represents our most significant material-use reduction, decreasing by about a third in just two years.



CUSTOMER IMPACT
OUR HANDPRINT

A little goes
a long way.

Consistency,
accuracy, and
fewer cleanings.

“Traditionally, customers would dilute our product from 100 or 200 parts to one part. But with our High Efficiency Release Agent (HERA™), they are able to use controlled micro-doses of lubricant – no dilution necessary. They don’t have tankers of water they’re using, so their die-casting processes result in little to no waste. We continue to innovate solutions that require customers to use less product because we’re committed to sustainable improvement that helps our customers succeed.”

MICHAEL TAMBASCO
Global Technology Leader
Die Cast

“For our polyurethane customers, we’re creating consistency and accuracy with SprayIQ™, a new system for release agent spray application that reduces the need for cleaning, which in turn limits water use. It controls the process by providing immediate feedback to the operator as well as spray application data for each spray cycle from the plant floor to line supervisors and process engineers.”

RADEK ŠTOURÁČ
Sales Manager, Polyurethane
Europe





INTERNAL FOCUS

OUR FOOTPRINT

Significant water conservation across regions.

Minimizing our impact with real results.

“Our most successful initiative to date has seen us significantly reduce our water usage across all regions – decreasing our annual intake by 30 million liters over the course of five years. Previously, we used two liters of water for every liter of product generated. Now, we’re down to less than $\frac{3}{4}$ liter per liter of product. This reduction is primarily the result of changes in how we cool our vessels.”

MIKE WARD

Operations Director
North America

“We’re minimizing our impact when it comes to our water usage, and so we’re taking that and extrapolating it out over our other sites, so we can make a significant impact. The cool thing about it is we’re seeing notable results. In Korea, for instance, one of our smallest manufacturing sites that is using the most amount of water to clean vessels, we’re starting to see a significant reduction in the percent: 20% water usage a month.”

AMANDA PUGH

Director of Global Manufacturing

"Global waste to grow by 70 percent by 2050 unless urgent action is taken."

WORLD BANK

2018-2020 RESULTS

Materials & Waste



According to the World Bank, global waste levels are set to increase by 70 percent by 2050 with consequences for human health environments, especially in low-income countries. With China’s recent ban on importing recyclables, worldwide disposal challenges have become even more pressing: the Yale School of Environment suggests that nearly 111 million tons of plastics will need to be addressed with transformative solutions within the coming decade.

OUR GOALS

**Reduce waste generation
15% by 2023**

**Increase amount of recycled material
by weight to 9 KGs by 2025**

OUR CALCULATIONS

$$\frac{\text{MAT volume (liters) of waste}^* \times 100}{\text{production volume (liters) MAT for the same period}} = \text{waste as a \% of production volume (liters)}$$

$$\frac{\text{Recycled material}^\dagger \text{ (kg) MAT}}{\text{production volume (liters) MAT} \times 1000}$$

*Waste includes only solvent or water that comes from cleaning, rinsing, washing down of vats, etc. of equipment and containers, and is then scrapped. Calculate waste as a percent of total production volume.
 †Material recycled = steel, plastic, or fiber containers, cardboard, paper, plastic wrap, wood pallets, glass, solvents, water, e-waste, and batteries.

Helping customers reduce product use and scrap rate has been fundamental to the entire Chem-Trend business model since our founding over 60 years ago. The products we create are formulated to solve manufacturing challenges efficiently, and we are always innovating toward increased sustainability and decreased waste. Our 2023 goal of 15% waste reduction requires our global operations to be creative in developing improved ways of reducing waste.

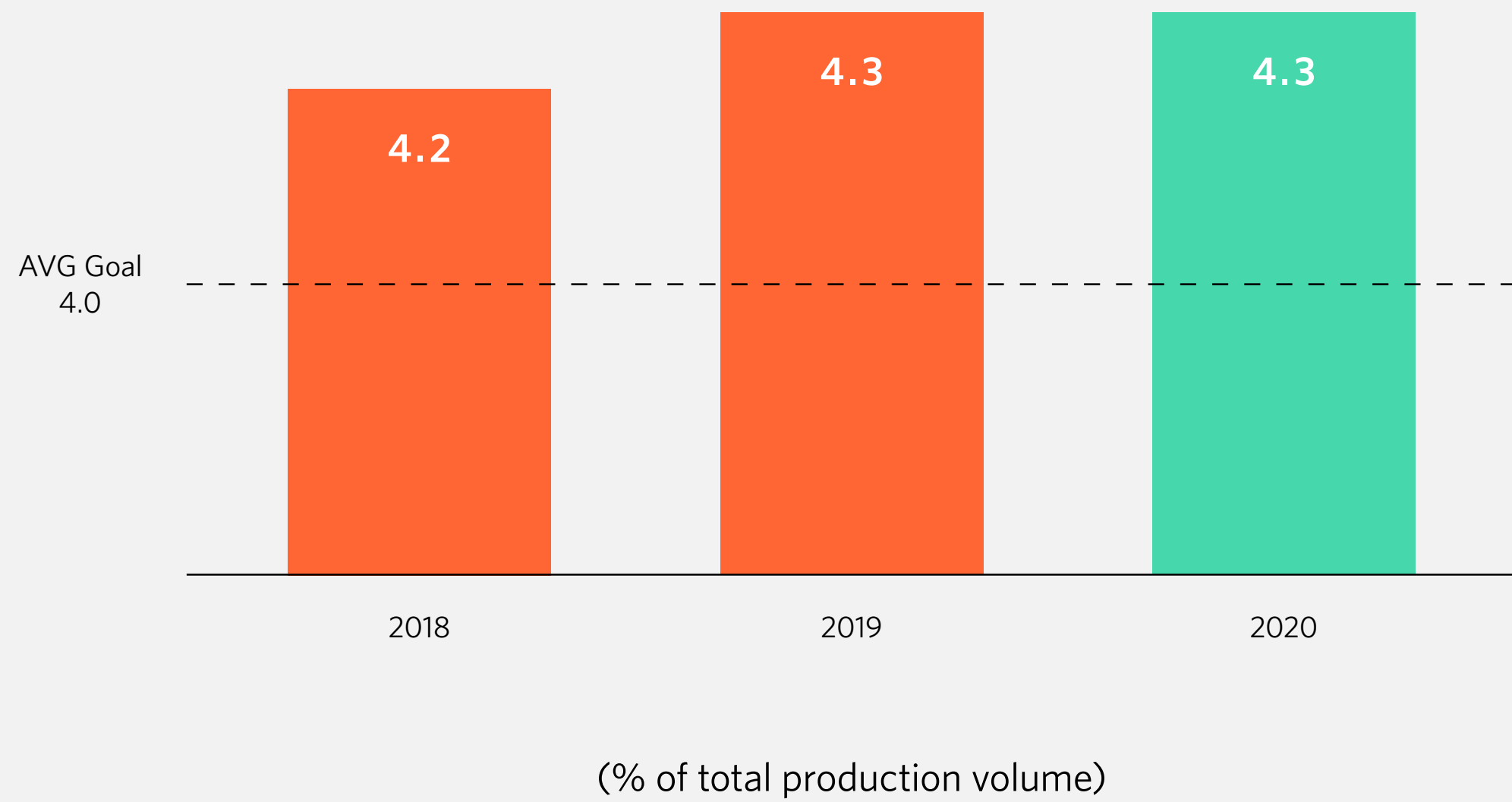
While our 2025 recycled material by weight goal is set at 9 KGs, uncertainty in the Chinese import recycling market has made reaching this metric potentially one of the most difficult. Striving to meet this goal, we look internally to ensure we are accurately recording all forms of our recycling initiatives and continuing efforts to identify other opportunities to move the needle.



RESULTS

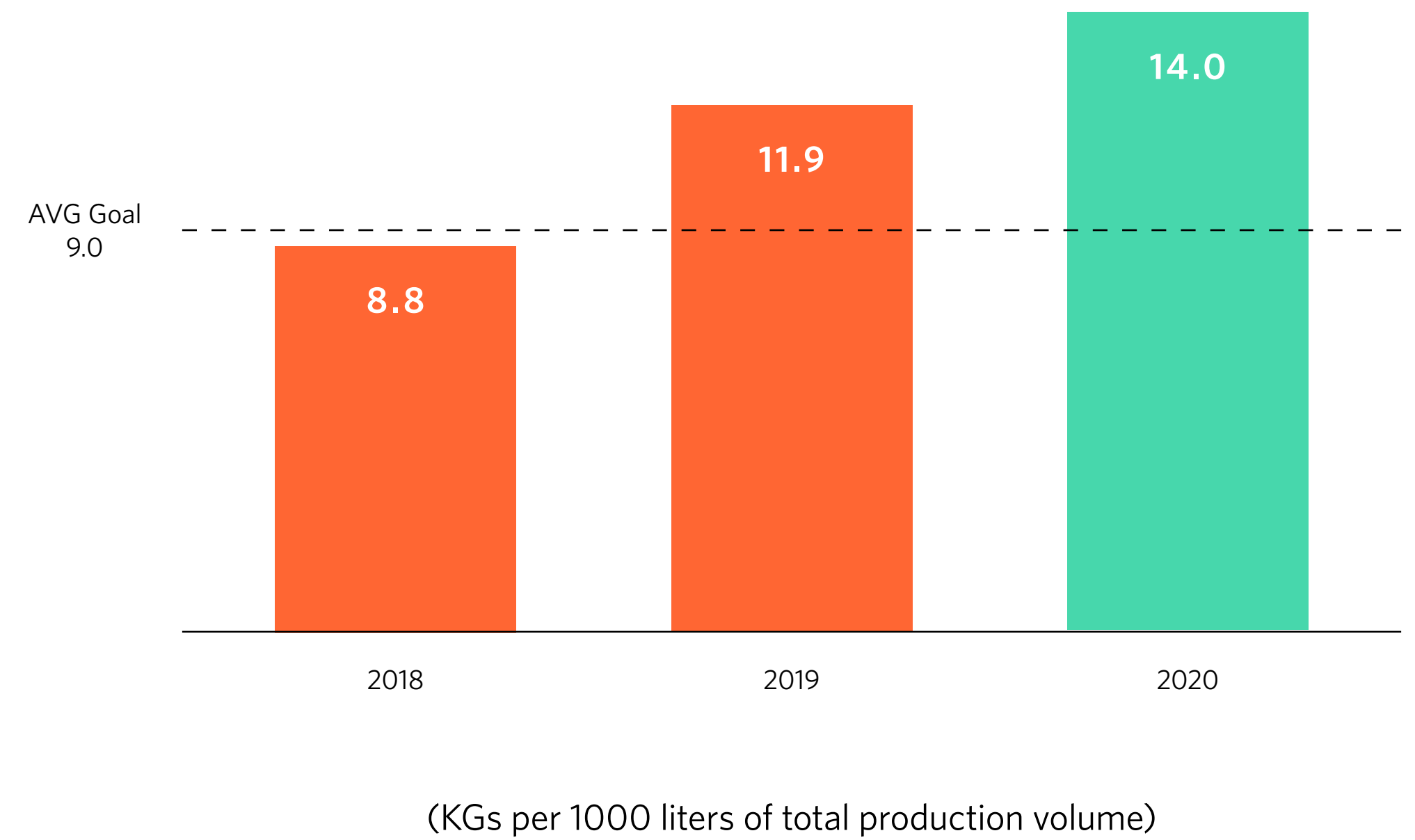
Global Waste Generation in Relation to 2018-2020 Goal

Material efficiency is one of the three specific sustainability areas with greatest potential for improving operations.



Global Recycling in Relation to 2018-2020 Goal

Recycling materials is a global challenge for which we are striving to create innovative new solutions.



CUSTOMER IMPACT
OUR HANDPRINT

Turning data into
waste reduction.

“Our products perform better, so naturally before sustainability was even a thing, we were helping customers reduce scrap and waste, and use less product. We’ve developed equipment that can measure how much product customers are using and give them feedback on how consistent their processes are, so adjustments can be made.”

ROB CURTIS
Director of Global Engineering

Working toward a
new standard.

“We have thermoplastics customers today who are recycling in a closed loop and are able to recycle our concentrated purging compound grades into new products. We are working to make this more of the standard, rather than a unique situation. This is in addition to how, overall, our technologies help extend the lives of machines, so our customers are able to extract all the value from the large investments they make in equipment. This can result in fewer machine replacements in the long term — and less waste.”

GRAZIANO PESTARINO
Global Account Manager
Thermoplastic Packaging

Providing customers
with sustainable
alternatives.

“We offer our advanced knowledge of chemical waste management so customers are aware of options besides landfilling.”

CHRISTOPHER BARRICKLOW
Global HSE & Regulatory Compliance Director

A financial and sustainability win for customers.

“DilutionIQ™ not only revolutionizes the way dilution is monitored, but also offers the customer a substantial amount of real-time data. In conjunction with the new innovative chemistries that Chem-Trend has developed, this dilution monitoring equipment is bringing outstanding sustainability results. In some cases, we have been able to considerably reduce customer consumption, allowing for Chem-Trend to gain new business, and for both organizations to achieve mutual sustainability goals. It’s a win for both parties.”

KELLIE PARKER

National Account Representative, Die Cast North America



Recycling to better serve customers.

“In the early days of the pandemic, we experienced a tote tank shortage. Recycling them was a solution that allowed us to keep our customers supplied during this time. We offered a service to customers where we would come pick up tote tanks, bring them back to our facilities, and clean them ourselves. While this added to our water usage, we were able to use our expertise and equipment to clean more efficiently while eliminating the need for our customers to clean and dispose of the tote tanks. Overall, it was likely more sustainable — and it helped keep our customers’ operations moving forward without disruption.”

MIKE WARD

Operations Director
North America

Working together to realize long-term sustainable goals.

“I’ve been working alongside a medium-density fiberboard (MDF) manufacturer for over 20 years to help realize long-term sustainability goals that will make an outsized impact. They built their plant on the idea of transforming rice straw, an agricultural waste product, into fiber panels, which could be used to make furniture, cabinetry, doors, moldings, and more. They found the material to perform similarly, and in some cases, better than traditional wood fiber-based products. This innovation has finally become a reality, and they are upscaling their plant to produce the first post-harvest, environmentally sustainable MDF, after many obstacles.”

MATT COOK

Sales Representative
Composites, Polyurethane & Wood Composites
North America





INTERNAL FOCUS
OUR FOOTPRINT

Using limited resources wisely.

“We reduced water usage for cleaning our vessels from 20 liters down to 8 liters. In our facilities, hot water is not convenient to acquire, so we implemented a system where we use as little water as possible to clean our vessels efficiently and effectively. Constantly refilling and transporting a pail wasn’t convenient, creating a real incentive to get the job done with less water.”

BO WEI
Operations Director
Asia Pacific



Looking Toward the Future

“As we move into the future, we do so with ambitious goals, including a 25% CO₂ reduction by 2025 with an overarching goal of CO₂ neutrality by 2030. This is a Freudenberg initiative that we will support.”

In order to get there, we aim to meet our primary objectives of purchasing green energy and conducting manufacturing building energy assessments that identify improvement areas from compressed air leaks to shutdown procedures for things like generators, HVAC, lighting, and high horsepower equipment.”

MIKE WARD
Global Sustainability Officer

Creating innovative solutions that minimize waste and energy use for our customers is at the core of everything we do at Chem-Trend — it is also our responsibility as leaders in our industry. Looking toward the future, we recognize our essential role and obligation to be a force for positive change in the industry, and we aim to fulfill it as we have historically: by helping our customers integrate new, more efficient technologies into their operations for more successful results. We are committed to finding new opportunities to serve our customers, our team, communities, and the environment with unyielding efforts toward more sustainability and efficiency.

As we look toward meeting our 2025 goals, we recognize the critical need to continue to strive to identify new ways to reduce energy consumption, emissions, and waste.

Next Generation, Now





THE SUSTAINABILITY SCORECARD

AN INNOVATIVE TOOL TO ENHANCE OUR CUSTOMERS' SUSTAINABILITY

“With our Product Sustainability Scorecard, we have an effective tool to determine how well our newly developed products will contribute to our customers’ sustainability and our own overall efficiency goals.”

MIGUEL PSILLAKIS

Executive Vice President, Marketing & Technology

The product sustainability scorecard takes into consideration the health, safety and environmental impact of newly developed products in combination with their manufacturing complexity and the expected process efficiency gains to be delivered to customers as a result of the embedded technology. By combining these elements into a single score system, Chem-Trend has the ability to continually assess and evolve the sustainability of its product line.

As an objective product sustainability measurement calculator, this scorecard considers health, safety, and environmental aspects associated with new product technology as well as productivity efficiency gains and value addition to our customers.

- GHS CLASSIFICATION
- RENEWABLE CONTENT
- DIFFICULTY TO MANUFACTURE
- CORE PROCESS
- SCRAP REDUCTION
- APPEARANCE IMPROVEMENT
- RELEASE EASE
- PROCESSING STEPS ELIMINATED
- DOWNTIME SAVING

Our People Make the Difference

MEET THE GSAT

The Global Sustainability Advisory Team was founded in 2017 with the mission to create pathways to greater sustainability that add value to our customers' operations and our own. Built on a history of sustainability efforts and our parent company Freudenberg's guiding principle of Responsibility (which encompasses environmental protection, corporate citizenship, human rights and labor standards, and more), the GSAT addresses a wide range of impact areas, from energy and emissions to health and safety.





MIKE WARD
Global Sustainability Officer
Operations Director, North America

Mike is our North American Operations Director and Global Sustainability Officer at Chem-Trend headquarters in Howell, Michigan. He has helped facilitate many global sustainability initiatives and contributed greatly to reduce negative impact on the planet. Mike and his sustainability team have been instrumental in reducing Chem-Trend's total water consumption by 30 million liters over the course of five years.



ROB CURTIS
Director of Global Engineering

Rob is involved in both the handprint and footprint of our products as the Director of Global Engineering at our global headquarters. Since certain industries are faced with unique sustainability challenges, he supports the sales team with the application of high-performance products. This support results in the conservation of energy and resources across the industries we serve.



MICHAEL TAMBASCO
Technology Leader, Die Cast
North America

Michael is based at our global headquarters as Chem-Trend's Technology Leader for Die Cast in North America. He develops products for customers that improve sustainability initiatives across a multitude of industries.



CHRISTOPHER BARRICKLOW
Global HSE & Regulatory
Compliance Director

Christopher is our Global HSE and Regulatory Compliance Director at Chem-Trend's global headquarters in Howell, Michigan. His passion for health, safety, and environment translates to a supportive role that focuses on global standards initiatives, the measurement of sustainable practices, and an open dialogue across multiple global regions.



AMANDA PUGH
Director of Global Manufacturing

As Director of Global Manufacturing, Amanda performs a critical role from our global headquarters in Howell, Michigan. She is a key player in interpreting sustainability benchmarks across our various regions and maintains our company goals by managing best practices. Her passion for reducing wastewater through innovative methods and strategic benchmarking benefits both our clients and the planet at large.



MIKE HILER
FCS Best Practices Consulting Office
(BPCO) Project Manager, Americas

Mike is the Project Manager for our Best Practices Consulting Office at Chem-Trend Americas. He provides strategic planning that improves internal efficiencies and facilitates company-wide initiatives.



AMANDA GALBAVI
Regulatory Affairs Supervisor
North America

Amanda enables our North American sustainability efforts as a Regulatory Affairs Supervisor in Howell, specifically managing environmental compliance for North America and our Environmental Management System/ISO 14001 certification. She ensures that Chem-Trend's innovative products are approved by the appropriate parties for customer use.



KELLIE PARKER
National Account Representative,
Die Cast, North America

As a National Account Representative for Chem-Trend's Die Cast division in North America, Kellie focuses much of her time on bringing the innovative sustainability of DilutionIQ™ to customers. Her role often involves educating the customer on our ever-evolving technologies that reduce product footprint and handprint.



EVERTON DAVIDSON LOURENÇO
Production Manager
Southern Hemisphere

As a Production Manager for Chem-Trend Brazil, Everton works with sales teams to bring our innovative DilutionIQ™ applications to customers. This customer-facing role directly impacts the sustainable handprint of our customers' operations.



UWE KAISER

Corporate Quality Manager
Europe

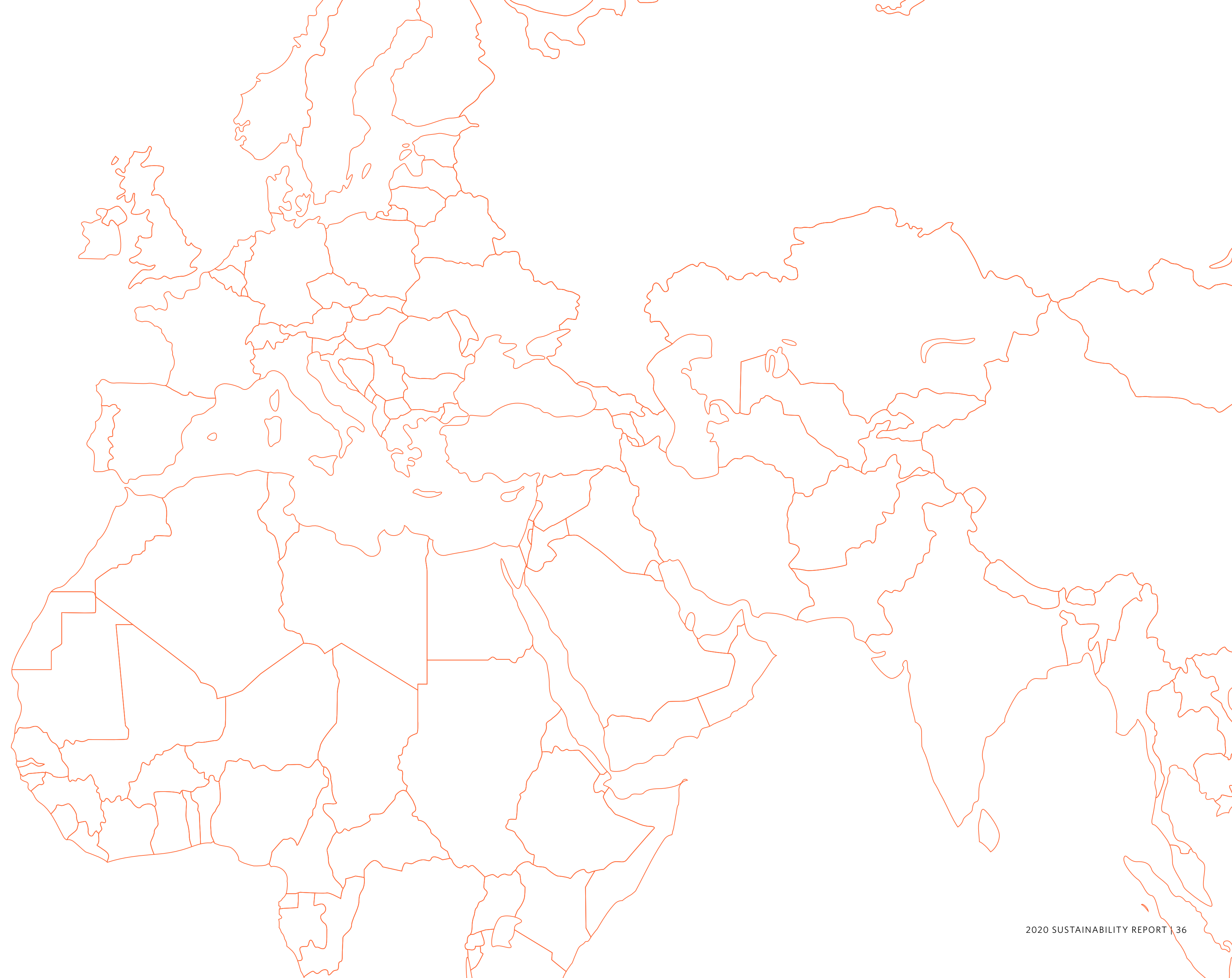
Uwe is based in Germany as our Corporate Quality Manager for Chem-Trend Europe. He ensures that sustainability and performance standards are met for our products across various industries.



RADEK ŠTOURÁČ

Sales Manager, Polyurethane
Europe

Radek is our European Sales Manager for Polyurethane at Chem-Trend Europe. He sees a sustainable future in Chem-Trend's water-based polyurethane products and the innovation of SprayIQ™, both of which can have a direct impact on a customer's environmental handprint.





SOUMITRA CHOUDHARY
Head of Technology,
Process Engineering & Labs, India

Soumitra is the Head of Technology for Process Engineering & Labs for Chem-Trend India. He prides himself on reducing the handprint of our products through a reduction of total company waste and the migration to water-based products.



BO WEI
Operations Director
Asia Pacific

As Operations Director for Chem-Trend in China, Bo Wei ensures that our team follows the strategies and requirements suggested by our Global team. His work for GSAT generally revolves around using innovation to reduce our handprint and footprint in China. He firmly believes that sustainability and water reduction for our clients can be achieved by “working smarter, not harder.”



SRIPAD ACHAR
Head of Production, Klüber & Chem-Trend
India

Sripad is the Head of Production for our partnership between Klüber and Chem-Trend India. He manages projects through Klüber to improve sustainability efforts in India and abroad.



ROBERT GONG
Senior Manager, HSE & Regulatory
Compliance, Asia Pacific

Robert assists with sustainability efforts for new products as an Asia Pacific representative for GSAT and as our Senior Manager of HSE & Regulatory Compliance in China. He helps customers use Chem-Trend materials more sustainably by playing a pivotal role in regulatory compliance, the coding process, and handprint part assessments.



DONG KYU (DK) LEE
Operations Manager
Asia Pacific

As Operations Manager for CTAP in Korea, DK Lee is responsible for production and HSE, quality assurance, and supply chain management. His focus on waste energy emissions and wastewater reduction helps mitigate our footprint in Asia and across the globe.

PAGE 5

Emissions increased by 3% between 2016 and 2020.

As we strive to continuously improve our sustainability practices, Chem-Trend has made a concerted effort to make all new facilities more energy efficient. The 3% increase in our emissions generation from 2016 to 2020 is due to the disparity in the ages of our facilities around the world.

Regional differences as well as growth also affect each individual setting. For example, our European Union properties do not utilize air conditioning, which helps keep emissions exceptionally low. Our United States location, by contrast, is higher than the average as a result of a recent lab expansion and reduced volumes.

We've taken each facility's unique uses and needs into consideration within our sustainability goals, and we will continue to make changes to reach a 15% reduction of emissions by 2023 and 25% by 2025.

GHG (CO₂) Emissions in Relation to 2016-2020 Goal (KGs)



Appendix



CHEMTREND.COM