



What is the  
science behind  
**building a  
better tomorrow  
together?**



Seek **Together™**

2018 Sustainability Report





# Table of Contents

How do you transform challenges into opportunities, redefine what’s possible and help create a more efficient, sustainable world at the same time? It takes collaboration, science and technology, and a belief that, together, we can work to positively impact the planet. At Dow, we’re partnering with our customers and other stakeholders to take on the challenges of a constantly changing world. We’re innovating to discover new, beneficial solutions in materials science. We are working continuously to improve our operational performance in ways that respect people, their safety and our environment. And we’re applying our employees’ passions and skills to help build thriving, resilient communities.



INTRODUCTION

Can the nature of business be good for nature and society?



WHO WE ARE

What happens when a company believes that science can do a world of good?



WHAT WE DO

Can solving customers’ needs also help address the world’s needs?



WHY WE DO IT

How can business and society collaborate for a better world?



HOW WE DO IT

How does embracing inclusion help promote the success of our people and planet?



ADDITIONAL INFORMATION

Governance and Additional Information



GRI CONTENT INDEX

GRI Content Index

# Can the nature of business



# be good for nature and society?

Welcome to the 2018 Dow Sustainability Report, Dow's 16th annual report. **GRI 102-52** This report reflects the Company's performance for the calendar year ended December 31, 2018. **GRI 102-50** 2018 was a year of significant change in preparation for Dow's separation from DowDuPont and gearing up for our ambition to be the most innovative, customer-centric, inclusive and sustainable materials science company in the world. Our Dow colleagues have maintained focus on many important sustainability initiatives so that the new Dow will be on strong footing toward realization of the sustainability ambition. You will hear about many of those initiatives and the Dow team members who have made them happen in the pages of this report. We welcome your engagement on any of the topics presented. Together, we can positively impact society and the planet.

This report has been prepared in accordance with the Global Reporting Initiative (GRI) Standards Comprehensive option. **GRI 102-54** The Comprehensive option requires that the Company report all of the General Disclosures described in the GRI Standards as well as all of the Specific Disclosures related to issues material to us. Mary Draves, chief sustainability officer and corporate vice president, Environment, Health & Safety, provides formal internal review of the report. **GRI 102-32** We have also sought independent assurance to verify compliance with the GRI standards. See page 112 of this report for the Independent Assurance Statement. This document also serves as Dow's UN Global Compact Communication on Progress for 2018.

## UN SDG ALIGNMENT



**Target 12.6:** “Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.” Dow has prepared annual sustainability reports for 16 years and continues to expand the scope of reporting. The Company contributes to the global discussion on effective sustainability reporting, with participation on the Task Force for Climate-Related Financial Disclosures, the Global Sustainability Standards Board and others.

Additional reporting that may be of interest to the reader can be found at <https://corporate.dow.com>:

- Downloadable version of this report, including additional interactive information
- The Dow Chemical Company's most recent previous report, covering the year ending December 31, 2017, and archive of earlier annual sustainability reports [DOW 102-51](#)
- 2018 The Dow Chemical Company Form 10-K
- Dow Final Form 10 Information Statement effective March 12, 2019

Thank you for your interest in our report. We welcome your questions, comments and feedback. You may contact us at:

**Jennifer Princing** Dow Sustainability Reporting  
j.l.princing@dow.com | 989-496-7154 **GRI 102-53**

## About the DowDupont Merger Transaction and Intended Business Separations GRI 102-10

Effective August 31, 2017, pursuant to the merger of equals transaction contemplated by the Agreement and Plan of Merger, dated as of December 11, 2015, as amended on March 31, 2017, The Dow Chemical Company (“TDCC”) and E. I. du Pont de Nemours and Company (“DuPont”) each merged with subsidiaries of DowDuPont Inc. (“DowDuPont”) and, as a result, TDCC and DuPont became subsidiaries of DowDuPont (the “Merger”).

Subsequent to the Merger, TDCC and DuPont engaged in a series of internal reorganization steps to realign their businesses into three subgroups: agriculture, materials science and specialty products. Dow Inc. (“Dow”) was formed as a wholly owned subsidiary of DowDuPont to serve as the holding company for the materials science business. On April 1, 2019, DowDuPont completed the separation of its materials science business and Dow became the direct parent company of TDCC (the “Separation”).

DowDuPont completed the separation and distribution of Corteva, Inc., the holding company for the agriculture business, on June 1, 2019. Following the separation, DowDuPont holds the specialty products business and changed its corporate name to DuPont de Nemours Inc. and is known as DuPont.

For the purposes of this report, “the Company” is intended to refer to the businesses of TDCC as they existed before Separation. There are situations where internal reorganization and business realignment activities have impacted the scope of data collection and reporting; these are explained as needed in the text of the report. Effective with the Merger and during 2018, TDCC’s business activities, including the assessment of aspects of sustainability policies and performance, ultimately were reviewed and managed by DowDuPont. As a result of this governance structure, certain information in the report is presented for DowDuPont.







Sincerely,

**Jim Fitterling**  
chief executive officer, Dow  
**GRI 102-14**

There’s no company in business today that can design their next generation of products without thinking about sustainability. At Dow, as we realize our ambition to be the most innovative, customer-centric, inclusive and sustainable materials science company in the world, we must ask our customers and ourselves how we can continue to provide new and innovative products – products the world needs and wants – while also protecting the planet. The needs of our customers and brand owners are significant value drivers for our sustainability work. Our ability to innovate alongside those customers and to differentiate ourselves from a sustainability standpoint will be a defining advantage for the new Dow.

To achieve this goal, we are working across our value chains with all stakeholders to incorporate their sustainability needs into our business strategy. That means integrating customer growth, consumer trends, public policy, and science and technology into the very heart of our business.

In addition, to achieve a truly sustainable business, we must build an accountable and inclusive organization. At Dow, Inclusion & Diversity is a business imperative. Our people are at the heart of our solutions and their diversity makes us stronger as a company and as a partner to our customers and to the world.

As we seek those solutions, we have a philosophy to guide us.

First, sustainability must be more than a top-down corporate initiative. It must be a fundamental part of our business strategy and customer partnerships.

Second, we are led by our 2025 Sustainability Goals. These are our third and arguably most progressive set of 10-year goals organized around a few key concepts that align directly with the UN Sustainable Development Goals:

- Advancing the circular economy
- Developing safer materials
- Maintaining world-leading operations performance
- Delivering breakthrough innovations
- Valuing nature

Finally, we must commit to developing societal blueprints by integrating all the different facets necessary for success: public policy, science and technology, and value chain innovation.

We have the talent and tools in place and have made significant strides in the past year. Among the 2018 highlights:

- Joined \$100 million effort with finance and infrastructure companies to prevent plastic waste in oceans.
- Signed a memorandum of understanding with the China Ministry of Environmental Protection to develop advanced, risk-based safety-assessment approaches for environmental protection.
- Employees removed 54,000 pounds of trash from beaches, waterways and green spaces while raising awareness about the benefits of a circular economy. Our volunteer Pulling Our Weight cleanup campaign is the largest single employee sustainability initiative in the Company’s history.
- Developed, in collaboration with New York University’s Stern School of Business, a first-ever draft of sustainability messaging for earnings conference calls.
- More than 25 percent of the way toward the goal of being the first company to achieve \$1 billion in value primarily through avoided costs from projects that are good for business and better for ecosystems.
- Continued growth of our collaboration with H&S Anlagentechnik in Germany to recycle post-consumer mattresses into the raw materials needed to make new mattresses and thermal insulation.
- Expanded our industry-leading Product Stewardship Academy, which provides hands-on training and mentoring for customers to ensure our products are handled and used in a safe and sustainable manner. The initiative was awarded an ACC Responsible Care Award in 2018.

These are but a few examples of how we are leading the way at Dow.

We have set some high standards – and stretch goals – for the new Dow. We’ve set aggressive growth targets. And we have coupled those with a higher sense of purpose. Through collaboration and science-based solutions, we can raise the bar and be the industry leader in creating a more sustainable planet.

Can science and collaboration create a more sustainable planet? We believe so. Whether it is working with our customers to develop materials that enable more sustainable products or working across our value chains to build a circular economy, we recognize how sustainability can be a driver of innovation and progress – for Dow, society and the planet.

In 2018, I was appointed chief sustainability officer, and I am honored to carry forward our Company’s legacy of leadership and action in sustainability. Clearly, action and leadership are needed from all sectors of society to solve the global challenges we face. As the new Dow, we’re committed to bolder decision-making, customer-centric innovation and activating the passions of our employees to contribute to meaningful, sustainable change for our customers, our industry, our value chains and the communities we serve.

We recognize lasting change starts with partnerships. When we developed our 2025 Sustainability Goals, we realized that if we were going to truly use our science, expertise and global reach to help shape a more sustainable world, we needed to stretch well beyond our own operations. As the new Dow, we continue to collaborate with other stakeholders to come up with fresh ideas and scalable solutions to societal challenges. By asking the right questions and seeking the right answers with our partners, we believe the potential for creativity and positive change is huge.

Among the questions we are asking:

- **How can we help make a world without waste possible?** In 2018, we announced a number of new actions to tackle plastic waste. We invested in the World Economic Forum’s Global Plastic Action Partnership and Circulate Capital’s \$100 million effort to finance infrastructure that prevents waste in oceans. We also are working with governments and other stakeholders in Southeast Asia, the United States and Africa to build durable roads with recycled plastic and to put us on the road to a circular economy.
- **How can adopting a nature lens be good for Dow and the environment?** More and more, nature is becoming part of our everyday decision-making. In less than three years, we have identified 57 nature-based projects that help achieve clean water, clean air, healthy soil or healthy ecosystems. Through the end of 2018, we have achieved more than 25 percent toward our goal of delivering \$1 billion in business value from these nature-based projects, primarily through avoided costs. Just as important, we are sharing what we’ve learned and the tools we’ve developed in collaboration with The Nature Conservancy, so other businesses can adopt similar practices at their sites.
- **How can we activate the passion of our employees for positive impact?** Through our R&D, and innovations such as our ECOFAST™ Pure Sustainable Textile Treatment, we’re helping to make the products that touch our everyday lives – like cotton T-shirts – more sustainable. In addition, we’re helping to develop the sustainability leaders of tomorrow through collaborations across the globe with schools and non-profits. By sharing their time and enthusiasm with underserved youth, our people are building a culture of inclusion and lifelong interest in learning about science and technology.

At Dow, sustainability is not just a function, or a collection of programs or products either. It is part of who we are and why we work. It is about collaboration. It is about improving our business and enhancing lives. It is the legacy we strive to leave.

As I look back on 2018, I am not only inspired by what we have accomplished, but also by the collective vision of our people and partners for a sustainable future. While lots of progress still needs to be made, I am confident that Team Dow’s passion and problem-solving abilities will continue to move our business and planet forward.

We invite you to learn more about our progress and welcome your feedback as the journey continues.



Sincerely,

**Mary Draves**  
Dow chief sustainability officer and vice president, environmental health & safety





WHO WE ARE

**We tend to think big. We take on the toughest challenges, and we stand ready to partner with our customers and the broader community to find the solutions that the world is seeking. Today the new Dow is a more focused company with the ambition of becoming the most innovative, customer-centric, inclusive and sustainable materials science company. We have a streamlined portfolio, with three market segments focused on consumer goods, packaging and infrastructure. Because our portfolio is more focused, we have the agility to apply the strengths of our operations and innovation engine to act on new opportunities and be catalysts for change. In everything we do, we strive for positive impact on society and the planet.**

**Company Profile** **GRI 102-1, GRI 102-3, GRI 102-5**

Dow (NYSE: DOW) combines one of the broadest technology sets in the industry with asset integration, focused innovation and global scale to achieve profitable growth and become the most innovative, customer-centric, inclusive and sustainable materials science company. Dow’s portfolio of performance materials, industrial intermediates and plastics businesses delivers a broad range of differentiated science-based products and solutions for our customers in high-growth segments, such as packaging, infrastructure and consumer care.

Throughout 2018, as a result of the Merger, DowDuPont owned all of the outstanding common stock of The Dow Chemical Company. The Dow Chemical Company’s business activities, including the assessment of performance and allocation of resources, ultimately were reviewed and managed by DowDuPont. Refer to the GRI Index on pages 114-119 to locate additional governance disclosures.

Since April 1, 2019, Dow is a publicly traded company with 748,824,164 shares of common stock outstanding at April 30, 2019.



**Coating the Way to Sustainable Solutions**

In homes and offices, paints with FORMASHIELD™ Binders are actively removing formaldehyde to improve indoor air quality. On the road, our FASTRACK™ Quick-Dry Technology is enabling conversion from solvent-borne to waterborne road paints, helping dramatically reduce volatile organic compound emissions that can contribute to smog. In factories, EVOQUE™ Polymer Technology is helping formulators improve the performance of paints while also improving raw material efficiency and lowering their carbon footprint. It is marketing-defining innovations like these that resulted in our Dow Coating Materials research team receiving a 2019 BIG Innovation Award by the Business Intelligence Group. The R&D group was recognized for its expertise in bringing new ideas to coating needs of all kinds, including technologies that advance sustainability. As a result, the paints we use not only look good and last, but, in many cases, offer an advantaged environmental profile.

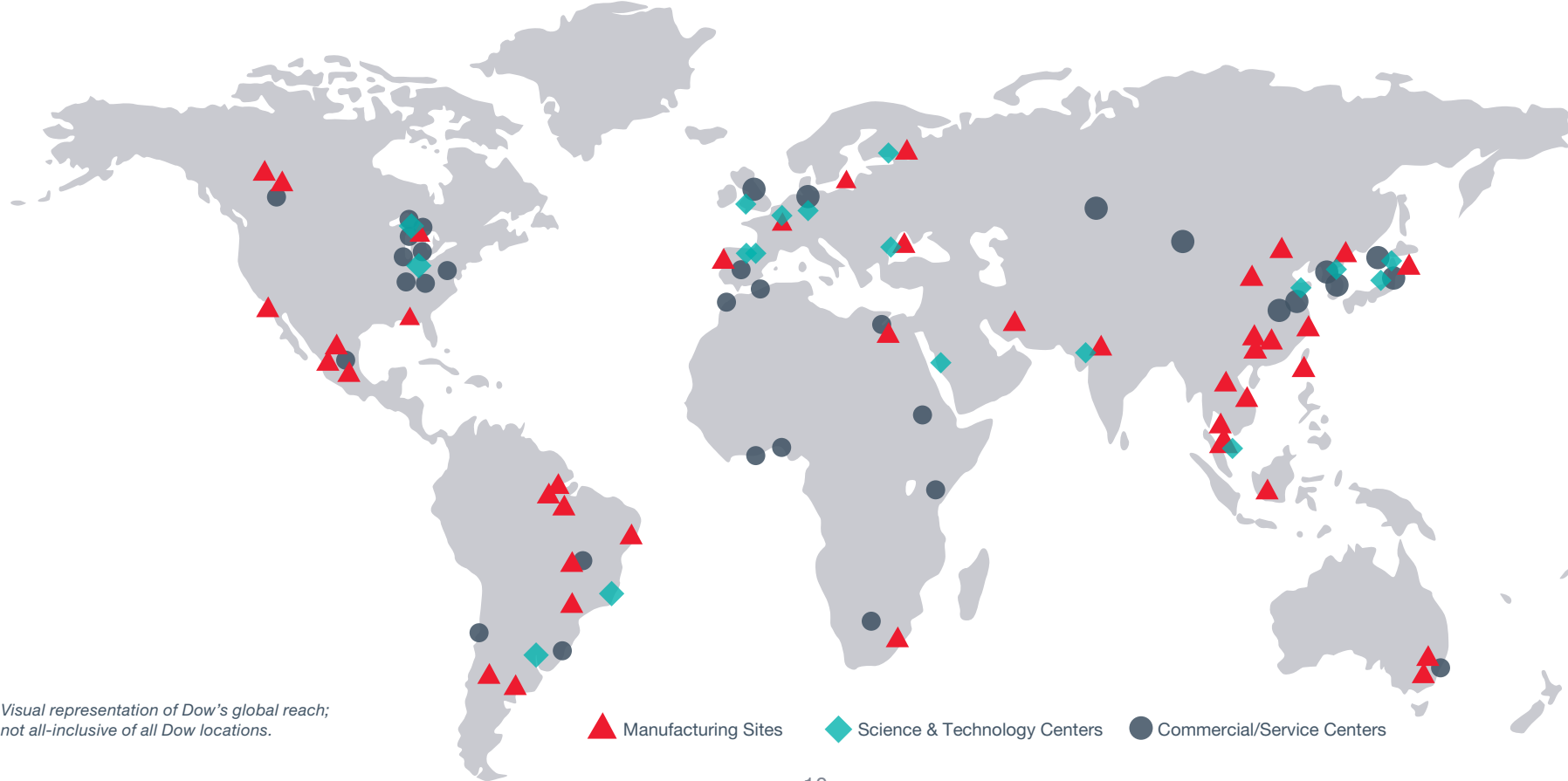
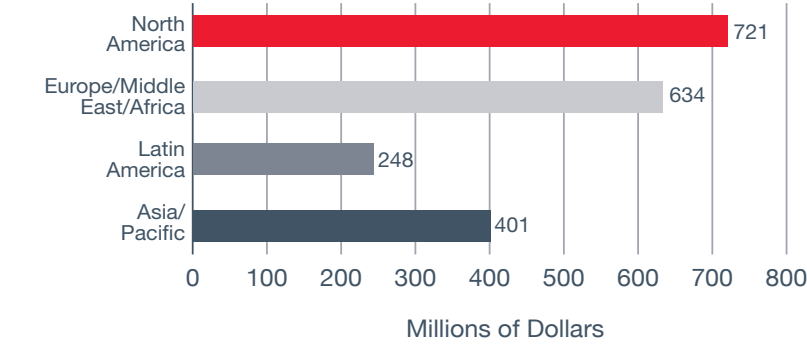


Location of Operations

With global headquarters in Midland, Michigan, The Dow Chemical Company operated 164 manufacturing sites in 35 countries as of December 31, 2018. Since April 1, 2019, Dow operates 113 manufacturing sites in 31 countries. The following table includes the number of manufacturing sites by geographic region. **GRI 102-4**

Geographic Region	Number of Sites
U.S. and Canada	57
Europe, Middle East, and Africa	44
Asia Pacific	42
Latin America	21
TOTAL	164

2018 Taxes (Payments to Governments)



Financial Highlights **GRI 102-7**

In 2018, The Dow Chemical Company's net sales were \$60.3 billion, up 9 percent from \$55.5 billion in 2017, driven by higher sales volume, reflecting additional capacity from U.S. Gulf Coast growth projects and increased supply from Sadara Chemical Company ("Sadara"), increased local price and the favorable impact of currency. The Dow Chemical Company employed approximately 54,000 people at December 31, 2018, down from approximately 56,000 people at December 31, 2016, primarily due to restructuring programs.

Financial data reported references The Dow Chemical Company 10-K for the fiscal year ended December 31, 2018. Investors may refer to the Dow Form 10 Information Statement issued in March 2019 that includes pro forma financial data.

2018 Sales by Geographic Area Total Sales: \$60,278MM (dollars in millions)		
United States \$20,008	Europe, Middle East and Africa (EMEA) \$18,148	Rest of World \$22,122

Economic value generated, distributed and retained, dollars in millions <b>GRI 201-1</b>	2018	2017
Revenues	\$60,278	\$55,508
Operating costs	\$42,157	\$37,851*
Wages/benefits	\$7,498	\$8,000
Payments to providers of capital	\$4,917	\$4,451**
Payments to governments	\$2,003	\$2,346
Community investments	\$41	\$42
Economic value retained	\$3,662	\$2,818***

\* The change from what was previously reported of \$38,533MM to \$37,851MM is \$682MM. This amount reflects what was moved from cost of sales, R&D and Selling, General and Administrative (SG&A) to Sundry in the 2018 10-K for the adoption of ASU 2017-07 (pension ASU).

\*\* 2017 value corrected. In last year's reporting, we only included interest expense, and excluded dividends to stockholders and dividends to parent company.

\*\*\*Sum adjusted due to data corrections above.



Photo Credit: NYSE





Photo credit: Herbert H. and Grace A. Dow Foundation

We aim to pioneer  
new solutions  
for sustainable  
development

**DOW**

while continuing to  
shape our business  
responsibly.

Dow’s Deep Roots in Sustainability

A sustainability mindset is nothing new at Dow. For more than 120 years, we have continually searched for better products for society, better ways to make them and a better understanding of the chemistry that makes them possible.

Saving Energy

THEN

In the 1900s, founder H.H. Dow teamed with electrical pioneer George Westinghouse to develop industrial cogeneration, a process that provides steam and electricity for manufacturing. Cogeneration remains one of the most efficient ways of extracting energy from fossil fuels and is widely used in our operations today.

NOW

We are one of the largest industrial buyers of renewable energy, which is used to help power our manufacturing sites and reduce our carbon footprint. In Brazil, renewable biomass and hydropower are used as energy sources. In Texas, we have entered into long-term wind power purchase agreements for our operations.

Cutting Waste

THEN

H.H. Dow believed in getting the most out of resources and used inexpensive and local materials to build his first chlorine plant in the late 1800s. This helped the Company lower production costs and survive price wars from competitors. In 1986, we established the Waste Reduction Always Pays (WRAP) program, which unified our waste reduction programs and resulted in significant savings.

NOW

Our Advancing a Circular Economy Sustainability Goal is focused on optimizing the use and reuse of resources. Today, we are collaborating in water-stressed regions to reuse municipal water for our operations. We also are working with municipalities to collect non-recycled plastic items and convert them into energy resources – helping keep more waste from landfills.

Advancing Product  
Stewardship

THEN

In 1934, we established our own toxicology lab to enhance our chemical safety testing capabilities – decades before the U.S. EPA existed. As part of Dow’s 2015 Sustainability Goals, we were the first chemical company to provide online public summaries of our product safety assessments.

NOW

As part of our Safe Materials for a Sustainable Planet Goal, we are collaborating across the value chain to promote product safety and transparency. Our Product Stewardship Academy was awarded a 2018 American Chemistry Council Responsible Care Award for helping to increase awareness of safe behavior, use of personal protective equipment and emergency response procedures in Africa.





Can solving  
customers’  
needs

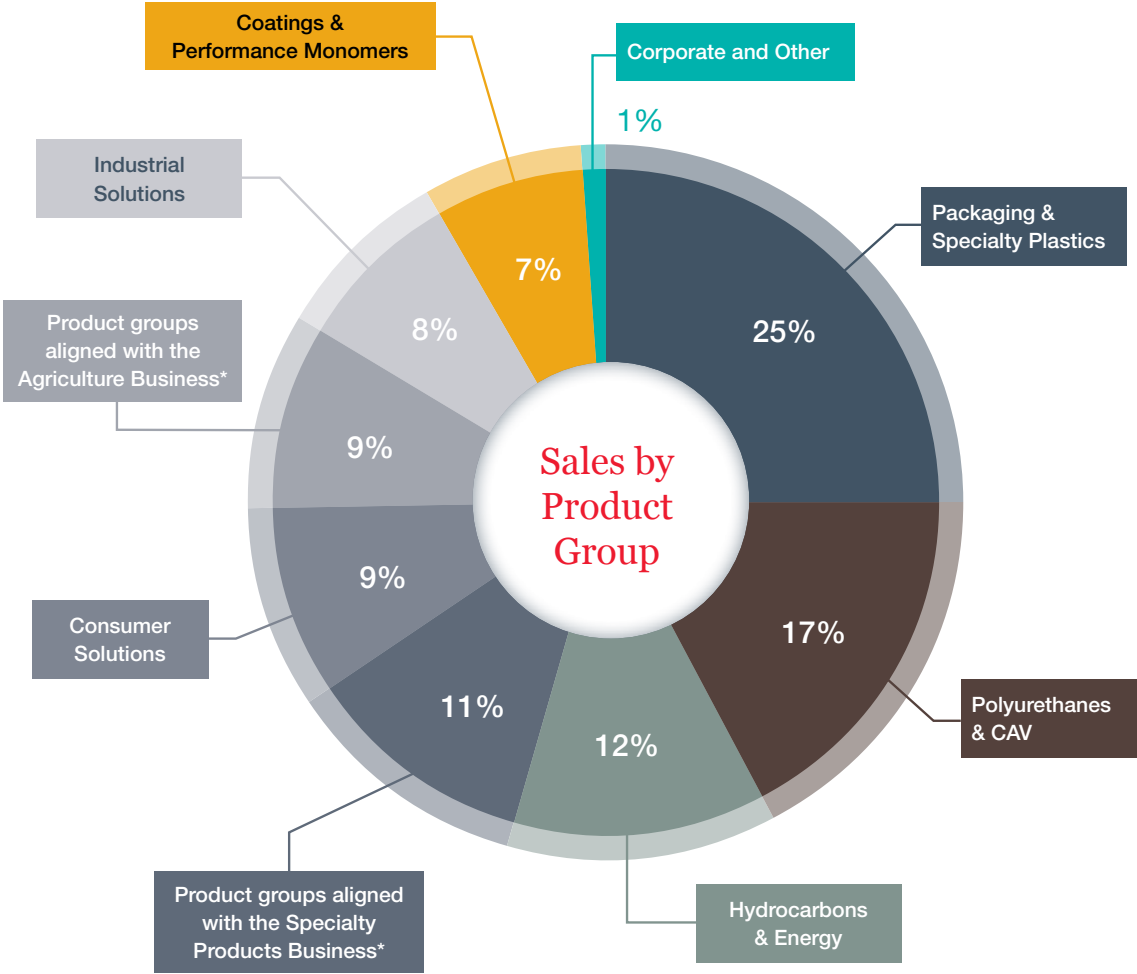
also help  
address the  
world’s needs?

WHAT WE DO

By understanding the sustainability needs of our customers and customers’ customers, we can accelerate development of new, more sustainable products and solutions. As a science and technology company, we develop premier materials science solutions that are essential to human progress. We have one of the strongest and broadest toolkits in the industry, with robust technology, asset integration, scale and competitive capabilities that enable us to address complex global issues. By listening to our customers and understanding their needs, we are innovating and bringing value to the products used in everyday life – from cosmetics and pharmaceuticals to cleaning products and clothing. Our products help make the world’s infrastructure more sustainable and durable, and our packaging innovations help improve food safety, extend freshness and reduce waste.

Product Groups GRI 102-2, GRI 102-6

Through diverse but focused industries, Dow delivers innovative products and solutions to markets around the world. Our market-driven, industry-leading portfolio of advanced materials, industrial intermediates and plastics delivers a broad range of differentiated technology-based products and solutions to customers in 175 countries in high-growth markets such as packaging, infrastructure and consumer care. On the following pages, please find a description of the Company’s principal product groups.



\*See page 5 for discussion of business separations



Principal Product Groups Aligned with the Materials Science Business



Coatings and Performance Monomers

Coatings and Performance Monomers makes critical ingredients and additives that help advance the performance of paints and coatings. The product grouping offers innovative and sustainable products to accelerate paint and coatings performance across diverse market segments, including architectural paints and coatings, as well as industrial coatings applications used in maintenance and protective industries, wood, metal packaging, traffic markings, thermal paper and leather. These products enhance coatings by improving hiding and coverage characteristics, enhancing durability against nature and the elements, reducing volatile organic compounds (VOC) content, reducing maintenance and improving ease of application. Coatings and Performance Monomers also manufactures critical building blocks based on acrylics needed for the production of coatings, textiles, and home and personal care products.



Consumer Solutions

Consumer Solutions uses innovative, versatile silicone-based technology to provide ingredients and solutions to customers in high-performance building, consumer goods, elastomeric applications and the pressure-sensitive adhesives industry. Our technology helps Dow customers meet modern consumer preferences in attributes such as texture, feel, scent, durability and consistency; and provides a wide array of silicone-based products and solutions that enable customers to increase the appeal of their products, extend shelf life, improve performance of products under a wider range of conditions and provide a more sustainable offering. Consumer Solutions also provides standalone silicone materials that are used as intermediates in a wide range of applications including adhesion promoters, coupling agents, crosslinking agents, dispersing agents and surface modifiers. It also collaborates closely with global and regional brand owners to deliver innovative solutions for creating new and unrivaled consumer benefits and experiences in cleaning, laundry and skin and hair care applications, among others.



Hydrocarbons and Energy

Hydrocarbons and Energy is the largest global producer of ethylene, an internal feedstock, and a leading producer of propylene and aromatics products that are used to manufacture materials consumers use every day. It also produces and procures the power and feedstocks used by the Company’s manufacturing sites.



Packaging and Specialty Plastics

Packaging and Specialty Plastics serves growing, high-value sectors using world-class technology, broad existing product lines and a rich product pipeline that creates competitive advantages for the entire packaging value chain. Dow is also a leader in polyolefin elastomers and ethylene propylene diene monomer (EPDM) rubber serving automotive, consumer, wire and cable, and construction markets. Market growth is expected to be driven by major shifts in population demographics; improving socioeconomic status in emerging geographies; consumer and brand owner demand for increased functionality; global efforts to reduce food waste; growth in telecommunications networks; global development of electrical transmission and distribution infrastructure; and renewable energy applications.



Industrial Solutions

Industrial Solutions is the world’s largest producer of purified ethylene oxide. It provides a broad portfolio of solutions that address world needs by enabling and improving the manufacture of consumer and industrial goods and services, including products and innovations that minimize friction and heat in mechanical processes, manage the oil and water interface, deliver ingredients for maximum effectiveness, facilitate dissolvability, enable product identification and provide the foundational building blocks for the development of chemical technologies. Industrial Solutions supports manufacturers associated with a large variety of end markets, notably, crop protection offerings in agriculture; coatings, detergents and cleaners; and solvents for electronics processing, inks and textiles.



Polyurethanes and CAV

Polyurethanes and Chlor-Alkali & Vinyl (CAV) is the world’s largest producer of propylene oxide, propylene glycol and polyether polyols, and a leading producer of aromatic isocyanates and fully formulated polyurethane systems for rigid, semi-rigid and flexible foams, and coatings, adhesives, sealants, elastomers and composites that serve energy efficiency, consumer comfort, industrial and enhanced mobility market sectors. Polyurethanes and CAV provides cost advantaged chlorine and caustic soda supply and markets caustic soda, a valuable co-product of the chlor-alkali manufacturing process. It also produces ethylene dichloride and vinyl chloride monomer, which is used to make polyvinyl chloride (PVC). The product grouping also provides cellulose ethers, redispersible latex powders, silicones and acrylic emulsions used as key building blocks for differentiated building and construction materials across many market segments and applications, ranging from roofing and flooring to gypsum-, cement-, concrete- or dispersion-based building materials.



Principal Product Groups Aligned with the Specialty Products Business



Electronics and Imaging

Electronics and Imaging is a leading global supplier of differentiated materials and systems for a broad range of consumer electronics including mobile devices, television monitors, personal computers and electronics used in a variety of industries. This product line includes a broad portfolio of semiconductor and advanced packaging materials including chemical mechanical planarization (CMP) pads and slurries, photoresists and advanced coatings for lithography, metallization solutions for back-end-of-line advanced chip packaging, and silicones for light emitting diode (LED) packaging and semiconductor applications. This product line also includes innovative metallization processes for metal finishing, decorative and industrial applications, and cutting-edge materials for the manufacturing of rigid and flexible displays for liquid crystal displays and quantum dot applications.



Industrial Biosciences

Industrial Biosciences is an innovator that works with customers to improve the performance, productivity and sustainability of their products and processes through advanced microbial control technologies such as advanced diagnostics and biosensors, ozone delivery technology and biological microbial control.



Nutrition and Health

Nutrition and Health uses cellulosics and other technologies to improve the functionality and delivery of food and the safety and performance of pharmaceutical products.



Safety and Construction

Safety and Construction unites market-driven science with the strength of highly regarded brands such as STYROFOAM™ brand insulation products, GREAT STUFF™ insulating foam sealants and adhesives, and FILMTEC™ reverse osmosis and nanofiltration elements to deliver products to a broad array of markets including industrial, building and construction, and water processing. Safety and Construction is a leader in the construction space, delivering insulation, air sealing and weatherization systems to improve energy efficiency, reduce energy costs and provide more sustainable buildings. Safety and Construction is also a leading provider of purification and separation technologies including reverse osmosis membranes and ion exchange resins to help customers with a broad array of separation and purification needs such as reusing waste water streams and making more potable drinking water.



Transportation and Advanced Polymers

Transportation and Advanced Polymers provides high-performance adhesives, lubricants and fluids to engineers and designers in the transportation, electronics and consumer end markets. Key products include MOLYKOTE® lubricants, silicone solutions for healthcare, MULTIBASE™ TPSiV™ silicones for thermoplastics, and BETASEAL™, BETAMATE™ and BETAFORCE™ structural and elastic adhesives.

Principal Product Groups Aligned with the Agriculture Business



Crop Protection

Crop Protection serves the global production agriculture industry with crop protection products for field crops such as wheat, corn, soybean and rice, and specialty crops such as trees, fruits and vegetables. Principal crop protection products are weed control, disease control and insect control offerings for foliar or soil application or as a seed treatment.



Seed

Seed provides seed/plant biotechnology products and technologies to improve the productivity and profitability of its customers. Seed develops, produces and markets canola, cereals, corn, cotton, rice, soybean and sunflower seeds.





## 2025 Sustainability Goals

In 2015, Dow announced its 2025 Sustainability Goals, a set of strategic goals designed to redefine the role of business in society. These goals, the Company’s third set of sustainability-related goals since 1995, build upon its previous two decades of goals. Dow’s 2005 Environment, Health & Safety Goals resulted in \$5 billion in safety, waste, water and energy savings. Dow’s 2015 Sustainability Goals provided more sustainable products and solutions addressing global challenges in food, energy, sustainable water supply and improved personal health.

Dow’s 2025 Sustainability Goals aim to expand the Company’s impact around the world, driving unprecedented collaborations to develop societal blueprints that will facilitate the transition to a sustainable planet and society. To achieve these bold and aggressive sustainability targets, Dow is harnessing its innovation strengths, global reach and dedicated employee population.

To further prioritize the sustainability goals, in 2018 each goal was assigned an executive sponsor in a business or functional leadership role most aligned to the aims of the goal. Goal implementation leaders reviewed and assessed metrics and targets associated with each goal, taking into account changes in global conditions since introduction of the goals, as well as the scope and scale of the new Dow. Throughout 2018, the 2025 Sustainability Goal teams continued to focus on maintaining momentum toward achievement of the goals.



Our 2025 Sustainability Goals will help redefine the role of business at its intersection with society. They are our guide as we work to improve the well-being of humanity with solutions that are good for business and good for the world.

Jim Fitterling, chief executive officer, Dow

### 2025 Sustainability Goals Dow’s Thought Leadership and Actions

2015 Sustainability Goals  
Product Solutions to World Challenges

Dow’s Blueprint  
Changes in technology, public policy and the value chain that lead human society toward sustainability

2005 EH&S Goals  
Journey to EH&S Excellence

Dow’s Handprint  
Products and services that help customers meet their challenges

Dow’s Footprint and EH&S Culture  
World-leading operations and supply chain performance

1995200620162025





2025 Sustainability Goals



Leading the Blueprint

Dow leads in developing societal blueprints that integrate public policy solutions, science and technology, and value chain innovation to facilitate the transition to a sustainable planet and society.



Delivering Breakthrough Innovations

Dow delivers breakthrough sustainable chemistry innovations that advance the well-being of humanity.



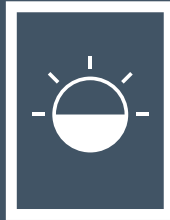
Advancing a Circular Economy

Dow advances a circular economy by delivering solutions to close the resource loops in key markets.



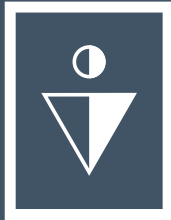
Valuing Nature

Dow applies a business decision process that values nature, which will deliver business value and natural capital value through projects that are good for business and better for ecosystems.



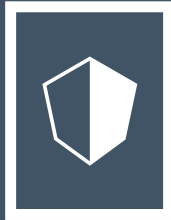
Safe Materials for a Sustainable Planet

We envision a future where every material we bring to market is sustainable for our people and our planet.



Engaging for Impact: Communities, Employees, Customers

Dow people worldwide directly apply their passion and expertise to advance the well-being of people and the planet.



World-Leading Operations Performance

Dow maintains world-leading operations performance in natural resource efficiency, environment, health and safety.

2018 Progress Against 2025 Sustainability Goals



2025 Sustainability Goal Updates



Leading the Blueprint

Collaboration in new and deeper ways across the public and private sectors is essential for the transition to a sustainable planet and society. Dow seeks to lead in developing societal blueprints that integrate public policy solutions, science and technology, and value chain innovation to facilitate that transition. Dow's blueprints will align to the United Nations Sustainable Development Goals (SDGs) to ensure significance and relevance to solving societal challenges and transitioning to a sustainable planet and society. The blueprints will draw on the best practices of existing collaborations and, in partnership with the other Dow 2025 Sustainability Goals teams and businesses, forge new collaborations for greater impact.



In 2018, Dow released two blueprints – Sustainable Watershed Management and Unlocking Carbon Reductions – that tell the story of Dow's collaborations and chart the path forward for broader impact.

The Sustainable Watershed Management blueprint was launched at World Water Week in Brazil in March 2018 in preparation for a full launch at the UN High Level Panel for Water in July 2018. The blueprint shares case studies on the multiple roles Dow has played as a stakeholder in the watersheds where our employees live and we operate. It also includes some of the tools and best practices we developed so others can use them to accelerate their own sustainable watershed journeys. For example, the blueprint was used to share our externally available water strategy with Great Lakes Commission Executive Director Darren Nichols, who visited our Terneuzen site in The Netherlands in spring 2019. We will further integrate and expand the water blueprint thinking internally and externally.

The Unlocking Carbon Reductions blueprint was launched in July 2018 at the UN Global Compact Cities Programme's Local 2030 Day. It is centered on Dow's learnings and experience in successfully developing carbon-saving projects for the Olympic Winter Games Sochi 2014 and Olympic Games Rio 2016. The projects demonstrate the power of collaborations to expand and deliver lasting impacts in various value chains globally. The carbon blueprint encompasses the Dow Climate Solutions Framework, a carbon reduction

framework that is being deployed in the Dow-International Olympic Committee (IOC) Official Carbon Partnership announced in September 2017. The Dow-IOC Carbon Partnership represents a new type of sustainability collaboration that goes beyond the Games, venues and host cities to provide a blueprint for carbon collaboration. Dow is sharing its technology and knowledge with its customers and other stakeholders to implement approximately 10 low-carbon technology projects around the world. These projects are tailored to country-specific needs and will mitigate greenhouse gas (GHG) emissions in the areas of infrastructure, transportation, packaging and manufacturing. Dow provides life-cycle expertise, technologies, application expertise and market access to support the carbon-mitigation program. Furthermore, Dow sees the collaboration as an opportunity for businesses in the value chain to join them in beyond-business-as-usual practices to accelerate the development and adoption of carbon-mitigating technologies. These collaborations help reduce carbon footprints along industry value chains, build capacity in local markets and create a market-driven approach that supports countries' Nationally Determined Contributions (NDCs) under the Paris Agreement.

Global collaborations such as the Dow-IOC partnership amplify valuable sustainable change and are central to Dow's blueprint thinking. In addition to the two blueprints already implemented, we have Product Safety and Valuing Nature blueprints in the pipeline to be launched in 2019 and are tracking ideas for blueprints to prioritize for development in future years. Building internal capacity with more employees applying blueprint thinking is a key factor in identifying collaborations that will drive a step change in solving issues.



Delivering Breakthrough Innovations

Our Delivering Breakthrough Innovations Goal is designed to deliver breakthrough sustainable chemistry innovations that advance the well-being of humanity. The core belief behind this goal is that collaborations of passionate and creative people at the intersections of the sciences will solve world challenges. In addition, the design,

manufacture and use of efficient, effective, safe and more environmentally benign products and processes will move us toward a more sustainable future.





In 2018, Dow products and processes again were acknowledged by awards recognizing sustainability. In fact, all six of our R&D 100 awards were for sustainability-related products, such as ENGAGE™ PV Polyolefin Elastomers that enable expansion of photoelectric power production, and ECOFAST™ Pure Sustainable Textile Treatment that reduces the chemicals and water used to dye cotton fabric. The goal uses five targets to track progress:

- Dow will be a leader in energy and GHG life-cycle management by ensuring the ratio of benefits of our product portfolio to burdens is at 3:1. As of the end of 2018, the aggregate result is near 5:1, exceeding the target. This aggregate value has already been updated to reflect the product portfolio of new Dow, post-spin from DowDuPont. This is an exception to the stated boundaries of this report in general. Calculating the benefit to burden ratio of several product groups has been completed by project teams participating in the Sustainability Academy (see page 66 for additional detail).
- Dow will innovate to increase the positive net impact of products across all markets such that the benefit to global sustainable development exceeds burdens by 4X. We have not yet assessed enough of our innovation portfolio to report a value for this metric. In 2019, the goal implementation team is committed to focusing on assessing the innovation portfolio.

- Dow will continue to improve its sustainable chemistry performance and report progress externally. The Sustainable Chemistry Index (SCI), an internally developed assessment tool, has provided an internal benchmark to inspire and track business engagement and progress on sustainable chemistry. One business unit has set a goal to move from average to top-quartile performance and become the leader, through clear pursuit of all aspects of their sustainability strategy, increased external recognition and excellent analysis of the benefits and fates of their products. The SCI helps drive friendly competition to improve. See page 56 for more discussion of the Sustainable Chemistry Index and reporting on aggregate values from the SCI.
- Dow businesses will set and achieve their own business-specific sustainability goals. We track business-specific sustainability goals using the SCI. In 2018, each business reported the existence of goals. Continuing work will be to track progress toward meeting the goals and how effectively the goals are communicated within the business.
- Dow will increase use of life-cycle assessment (LCA) to guide decision-making while meeting business and customer needs. LCA is used to better understand and analyze concepts and opportunities for a circular economy. Application of LCA is also measured as part of the SCI. Each business reports the number of LCAs completed each year and how the results are used to advance their strategies. In early 2019, identification of resources and training began to address the increasing demand for LCA.



It takes nearly 700 gallons of water to make your favorite T-shirt and another 2,108 gallons to pull up your perfectly worn-in jeans. What if one product could reduce those numbers? A winner of a 2018 R&D 100 Award, our ECOFAST™ Pure Sustainable Textile Treatment has the potential to help the textile industry tackle sustainability challenges by reducing water and dye use by up to 50 percent, and chemical use up to 90 percent in the cotton dyeing process. How does it work? ECOFAST Pure is added as a pre-treatment, which converts natural, negatively charged cotton fabric to a positively charged fabric, known as cationic cotton. This allows the fabric to pick up dyes more efficiently and without the use of additional processing chemicals. The result is long-lasting color fabrics using fewer resources.



Advancing a Circular Economy

Through innovation and collaboration, Dow will help facilitate the world’s transition to a circular economy, where waste and pollution are designed out of new products and services. Our goal is to advance a circular economy by delivering solutions to close the resource loops in key markets. We have measured success by

projects that provide circular economy solutions that deliver value through waste and emission reduction and by meeting customer demand for products with recycled or bio-based content.



In 2018, circular economy projects included:

- **Continued growth of a program to recycle used mattress foam into polyols.** Dow has entered into a collaboration with development partner H&S Anlagentechnik in Germany to economically recycle post-consumer mattress waste. The goal of this project is to create a new business eco-system by implementing the first industrial-scale reactor, which would convert end-of-life mattresses back to their main chemical building block (i.e., polyol). This “circular” polyol then would be used as a high-value constituent of new polyurethane foam formulations for different applications, such as new mattresses or thermal insulation.
- **Addressing global recycling challenges with a commercial leadership mindset.** New business models, infrastructure and waste management systems are needed around the world to create a global circular economy for plastic. In 2018, Dow’s Packaging and Specialty Plastics business appointed two senior commercial leaders to evaluate current plastics waste streams and identify innovations in economic recycling technology that will contribute to a global circular economy for plastic. In North America and Europe, the Middle East and Africa, the focus is primarily on advancing the circular economy of plastic through new product offerings via technologies that will be used to transform plastic waste into valuable resources. In Latin America and Asia Pacific, where recycling infrastructure is less advanced and plastic waste continues to increase, they will focus on new recycling, collection and infrastructure platforms for Dow and its local value chain partners that keep plastics out of the environment.

- **Bio-based feedstocks for renewable plastics.** As a result of collaboration between product stewardship, manufacturing, supply chain, product management and the hydrocarbons team, Dow is able to deliver renewable low-density polyethylene (LDPE) to specific customers. The renewable LDPE is a product based on renewable feedstock through a “mass balance system.” This is required because our crackers cannot specifically allocate renewable feedstock for LDPE only. In order to ensure the LDPE is genuinely renewable, Dow has achieved critical external certification, namely International Sustainability & Carbon Certification (ISCC) PLUS certification. This provides full transparency of the renewable material throughout the entire supply chain.
- **Successful application of end-of-life plastic in road construction.** Value-added markets and applications for product re-use are essential in a circular economy. Dow continued to expand our geographic scope of projects demonstrating that new value for plastic waste can be created in road construction when asphalt roads are mixed with plastic waste. Road projects have been completed in India, Indonesia, Thailand and the United States. Research conducted at Chulalongkorn University found that the asphalt-plastic roads are 15-33 percent more durable and lead to 6 percent higher skid resistance versus standard asphalt roads.







Valuing Nature

Dow applies a business decision process that values nature, which will deliver business value and natural capital through projects that are good for the Company and better for nature. In 2018, the Valuing Nature Goal achieved \$104.8 million in business value from 29 projects, primarily through avoided costs. From the announcement of the goal through the end of 2018, we have achieved more than 25 percent toward our goal of \$1 billion. Critically, 2018 was a turning point for the Valuing Nature Goal, where we are confident that we have moved past the early adopters and low-hanging opportunities and are becoming more ingrained in how we approach valuing nature in our operations. In the early phases of the goal, Dow’s leadership in sustainable environmental remediation gave us an advantage and enabled us to seamlessly incorporate engineered natural technologies. However, a major component of the Valuing Nature Goal is to incorporate nature into all of our business decisions via bottom-up culture change throughout our Company’s core: our operations footprint.

UN SDG ALIGNMENT

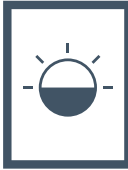
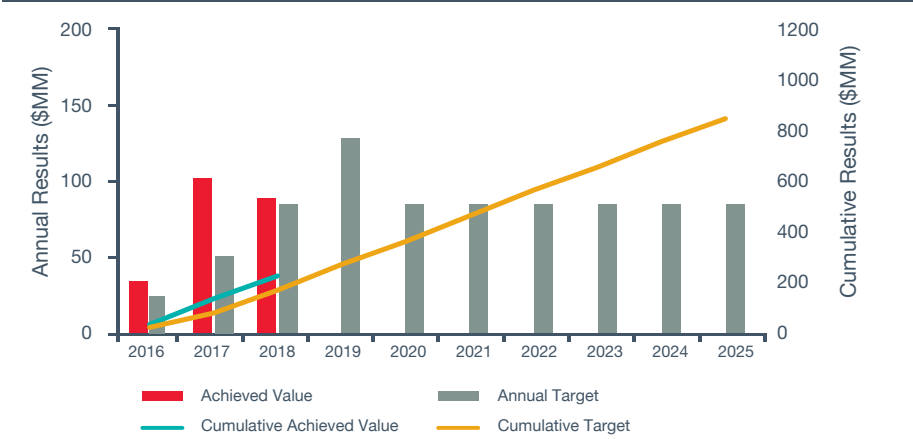


By working with our engineers, our operators and our project managers, we were able to apply a nature lens to our operations, finding value from projects that benefited clean air, clean water, healthy soil and healthy ecosystems. Our Nature Screen, which asks pointed questions about the aforementioned pillars of nature, is fully integrated into our capital allocation process.

To provide more detail about the Valuing Nature process, we published a paper in the journal *Science of the Total Environment*: “From Ash Pond to Riverside Wetlands: Making the business case for engineered natural technologies,” which demonstrates the Valuing Nature methodology. The paper showcases how the Ecosystem Services Identification & Inventory (ESII) Tool was used to define the optimal restoration plan for a 23-acre site adjacent to Dow’s Michigan Operations plant along the Tittabawassee River.

The team also continued to engage employees around the globe by conducting 22 business workshops, which are used to identify current and future opportunities for Valuing Nature projects and to inspire employees to view their site through a nature lens.

Value from Good for Business/Good for Nature Projects



Safe Materials for a Sustainable Planet

We envision a future where every material we bring to market is sustainable for our people and our planet. We will work toward this future by developing and promoting sustainable materials for tomorrow and leading candid conversations on product safety and sustainability by engaging with external partners. In addition, we are committed to open and transparent chemistry by listening to the needs of our value chain, including customers, brand owners and retailers.

UN SDG ALIGNMENT



Through its carbon-mitigation projects for the Olympic Movement, Dow has already delivered 4.3 million tonnes of carbon dioxide equivalent (CO<sub>2</sub>e) emission reductions. A new portfolio of similar projects is currently being developed by Dow to reflect its closer relationship with the International Olympic Committee (IOC). It’s a partnership that Dow estimates will help mitigate 6 million tonnes of carbon emissions by 2026. For example, multiple Dow solutions have been incorporated into the IOC’s new headquarters building — Olympic House — in Lausanne, Switzerland, to enhance its energy efficiency and sustainability. The IOC is seeking Leadership in Energy and Environmental Design (LEED) Platinum certification in part because of Dow solutions such as energy-saving sealants, low-VOC (volatile organic compound) paints that remove formaldehyde from air in buildings, and a waterproof membrane for the green roof.

For Sustainable Materials of Tomorrow, our signature initiative is to develop a sustainable materials strategy, in which we are evaluating our portfolio for challenged chemistries and setting an approach for substitution, innovation or stewardship. With this strategy, we are committed to delivering 10 sustainable alternatives to the market. To meet this target, we worked with a diverse internal team to compile criteria for what defines a sustainable alternative. Elements include performance, a favorable EH&S profile, enhanced life cycle and market acceptance. Using these criteria, CANVERA™ Polyolefin Dispersions were selected as Dow’s first sustainable alternative, CANVERA™ Polyolefin Dispersions offer a waterborne, spray-applied replacement for epoxy can coating systems, removing bisphenol A (BPA), epoxy and other materials of concern to customers and consumers in food applications. This example will be used in external engagements to advance the discussion on sustainability with stakeholders throughout the value chain.

For Leading a Candid Conversation, we are focused on outreach and collaborations to advance product safety practices around the globe. Our signature initiative is our Product Stewardship Academy, where we are doing outreach in developing markets to promote product safety practices. In 2018, we expanded our Product Stewardship Academy into additional countries and regions. We have now held academies in five countries including Ghana, Nigeria, Kenya, Ethiopia and the United Arab Emirates. The program builds on Dow’s long-standing Product Stewardship program by providing hands-on training as well as support and mentoring to distributors and customers to ensure products are handled and used in a safe and sustainable manner. Our industry-leading initiative was awarded an American Chemistry Council Responsible Care Award in 2018. We will continue to expand the program to other regions through 2025 and beyond to enable responsible and sustainable business growth that ensures the safety of humans and the environment.

As part of our commitment to courageous collaborations, we also signed a memorandum of understanding (MOU) with the Chinese Ministry of Ecology and Environment to advance the science on environmental protection. The aim of the MOU is to help build a solid scientific and technological foundation to boost China’s environmental quality, while raising the bar for theory and practice in environmental and chemical product governance. The goal of the collaboration is to advance product safety and environmental health in China.





## Engaging for Impact

Each day, Dow people are seeking solutions to the complex environmental, economic and social challenges facing our world. Through global citizenship and by engaging for impact, we put in action our commitment to advance human progress by helping to create sustainable communities.

As part of our efforts, we look for solutions to enable economic development, sustainability and education that lead to socially healthy and resilient communities, while also supporting and furthering business success. Our holistic approach promotes relevant, long-term change for communities by applying integrated solutions and cross-sector collaborations.

The passion and expertise of our people are the heart and soul of our work. In support of our goal to positively impact the lives of 1 billion people across the globe by 2025, Dow people are committing their time and talents to make a difference.

### UN SDG ALIGNMENT



In 2018, highlights included:

- Seventy-one percent of employees stated they had volunteered their time and/or skill sets, outside of daily work responsibilities, in support of community and/or global challenges in 2018, according to our annual Global Employees Opinion and Action Survey (GEOAS), which had a 76 percent response rate.



We believe the power of innovation is a fundamental driver of economic well-being, competitive advantage and sustainability. The power of our innovation portfolio translates directly into success for our Company, our customers and for society as a whole.

A.N. Sreeram, Dow's senior vice president and chief technology officer

- More than 2,300 STEM Ambassadors supported more than 4,500 teachers and enhanced STEM opportunities for approximately 200,000 students in and outside the classroom.
- The Dow Business Impact Fund provided approximately \$1.3 million in seed funding to seven projects across the globe. 2018 projects included the Public-Private Partnership for Sustainable Plastic & Waste Management project in Thailand, expansion of the Hefty® EnergyBag Program in Canada, waste collection and recycling in Jordan, safer and sustainable fashion industry practices in Ethiopia, an enhanced waste collection structure in Brazil, green bike lanes in the United States, and addressing a circular economy and plastic waste in South Africa.
- Through innovative leadership development programming conducted in partnership with PYXERA Global, 50 Dow leaders from around the world applied their professional skills and expertise to community-based problems by working virtually and in-country with 12 nongovernmental organizations (NGOs) in India, Rwanda and Senegal. The result is exceptional training for the employees, resolution of long-term issues for the NGOs, and business penetration into new markets for Dow. In total, nearly 10,000 hours of pro bono consulting service was provided by Dow employees.

Engaging for Impact activities support Dow's overall strategy to achieve top-quartile scores for employee engagement, and 100 percent of core leadership development programs include sustainability impact exposure and opportunity to help build a culture of volunteering.







World-Leading Operations Performance

Work toward our World-Leading Operations Performance Goal continued as planned in 2018.

We made significant progress in our operations performance in environment, health and safety in all four indices: Unplanned Event Reduction, Total Worker Health™ Index, Environmental Stewardship Index and Transportation Stewardship Index. We achieved or exceeded the annual targets for each. Dow senior leaders made two-day visits to 144 sites across 32 countries to engage employees in discussions on safety, ethics and inclusion.

Unplanned Event Reduction

We finished 2018 with eight severe injuries, which was below the prior year result of 13. Serious injuries include fatalities, high-consequence injuries (injuries with long-term impact) and injuries that had the potential to have life-altering impact if circumstances were only slightly different. Our 2025 target is to “eliminate fatalities, reduce severe injury and illness incidents, and maintain total recordable injury and illness rate at industry-leading levels.” To achieve this, our successful near-miss program has focused on high-risk tasks in operations. These are tasks that are covered under Dow’s Life Critical Standards – the critical few, most important rules and guidelines.

Dow ended 2018 with a 5 percent performance improvement over the prior year in process safety events. For our significant process safety event reporting, we count Level 1 and Level 2 events within our metrics system. Level 1 and 2 events are based on the API 754 definition of Tier 1 and Tier 2 process safety events but include operations such as research facilities and pipeline operations that are beyond the scope of API’s metric. Our Safe Conditions team, which allocates dedicated corporate capital funds for high-priority safety projects, focused on risk elimination or reduction. In 2018, we had 147 personal safety improvement projects across all regions that Dow operates. Main targets were reducing risk and addressing gaps in achieving Dow’s Life Critical Standards and worker exposure guidelines. The total annual spend in 2018 was the highest level since the high-priority program was established in 2014.

Very notable is the fact that we had no severe Motor Vehicle Accidents (MVAs) in 2018. We fully implemented a ban on cellphone calls while driving for all employees and contractors. We also started implementing telematics for vehicles on business and at our sites. This technology is expected to further improve driving performance.

Technology-enabled improvements also are helping us prevent unplanned events. Dow leads our industry in using key technologies such as robotics, unmanned aerial vehicles or non-

destructive testing to improve worker safety. We already reduced exposure to higher-risk situations by more than 750,000 hours using a wide range of new technologies for confined space entry, elevated work and industrial cleaning. By using robotics in 2018, Dow eliminated more than 1,000 confined space entries and more than 1,000 external inspections that would have required elevated work.

Total Worker Health

Dow eliminated 28 Priority 1 health risks versus a target of 25 in 2018. Priority 1 health risks are determined via quantitative assessments within three main areas: chemical, ergonomic or physical exposures. This takes us to a total of 48 reductions since the launch of the World-Leading Operations Performance Goal. We have finalized the plans for 25 closure projects in 2019. We also plan to utilize new technology. For example, we have piloted the application of exoskeletons to avoid ergonomic stress.

In 2018, all sites set their Healthy Culture Index, which includes 45 percent of sites already meeting or exceeding the requirements of the index. Some examples of the Healthy Culture practices include fatigue management, healthy food options, physical activity, industrial hygiene work practices, weight management, smoking cessation programs and more. For example, we have installed stand/sit

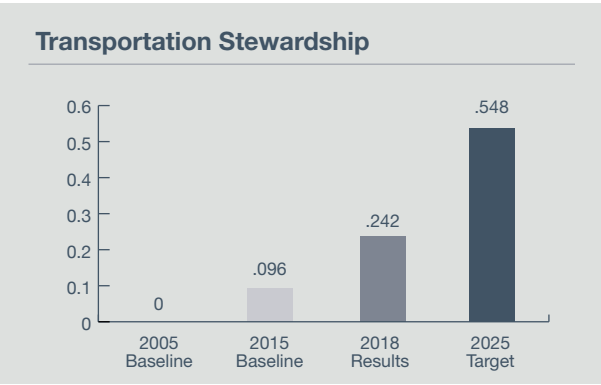
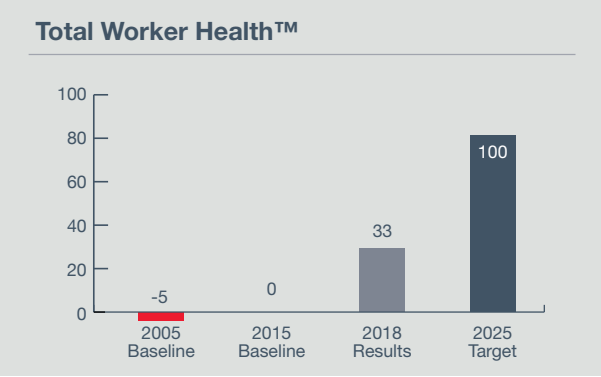
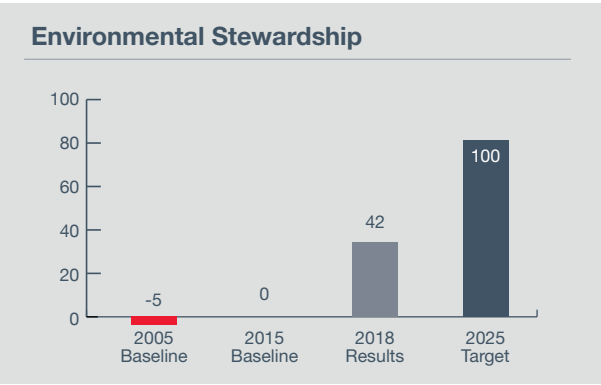
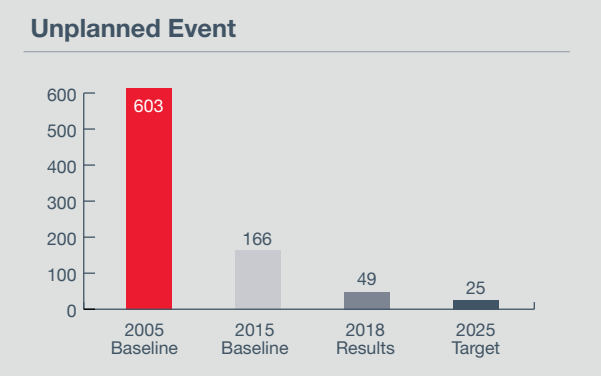
desk workstations in several locations, encouraging employees to be less sedentary.

Environmental Stewardship

In 2018, Dow further reduced our freshwater intake intensity at our water-stressed sites, with the overall improvement now standing at a 13 percent reduction from our 2015 baseline. Our 2025 Goal target is to reduce our freshwater intake intensity at key water-stressed sites by 20 percent. GHG, VOC, nitrogen oxides (NOx) and priority compound emissions remained flat versus 2017, despite increased overall production. Our 2025 Goal target is to grow but offset emission of priority compounds, VOCs and NOx. In addition, our GHG emissions remain below the 2006 level. Our 2025 Goal target is to grow globally over the next 10 years while keeping our absolute GHG emissions below our 2006 baseline.

Despite strong progress, continued effort is needed to ensure we can grow as a company while meeting our World-Leading Operations Performance environmental targets. Areas of focus in 2019 include overall waste intensity, where we will remain flat versus our 2015 baseline, and NOx emissions, where we are above our 2015 baseline despite remaining flat versus 2017.

To ensure sustainable progress toward all of our environmental targets, our Business Technology Centers worked to define key projects and improve the accuracy of the estimated costs for impacts gained. The updated playbook of projects will help us reassess the total spend needed to reach our 2025 goals. It also further validated that a significant amount of capital funding and resources will be needed if the new Dow is to successfully meet its World-Leading Operations Goal targets. Activity in 2019 will be focused on further understanding the



improvement and spend optimization opportunities available to meet Dow’s environmental targets in light of our overall growth plans.

Transportation Stewardship

By 2025, Dow has committed to achieving a 50 percent improvement in the Transportation Stewardship Index and eliminating severe transportation incidents that impact the communities through which our products, raw materials and intermediates flow. In 2018, we made significant progress with our Transportation Stewardship program, which is defined by three categories: 1) incident performance; 2) leading-edge programs; and 3) transportation risk across the value chain.

For more information on Transportation Stewardship and the global program driving our positive results, see the Supply Chain Sustainability section of the report on pages 96-103.



We piloted a novel approach to reduce the risk of forklift (FLT) and heavy equipment interfaces with humans. This area has been one of the top two risk categories for unplanned events and near misses in personal safety. A business focal point went site to site and performed a complete census (not just audit) of all FLT and heavy equipment tasks done regularly on the site using a Personal Safety Risk Assessment tool. Gaps identified were prioritized and action plans established. Our aim was to eliminate or implement engineering controls to address the gaps rather than just accepting administrative and procedural controls. In many cases, relatively low-cost and simple changes were implemented to completely eliminate the task, separate humans from the task or install simple engineering controls to reduce risk. We plan on leveraging this concept to other businesses in 2019.





How can  
business and  
society

collaborate  
for a better  
world?

WHY WE DO IT

No one company, no one government or no one organization can forge the sustainable future we seek. The challenges we face as a society – from climate change to ocean waste – cross boundaries and require systemic changes beyond the capabilities of one company or even one industry. But together, we can find answers. By collaborating with diverse stakeholders, we can expand the impact of our actions. We can find new answers by listening to diverse perspectives. And we can achieve new value and adopt new models for a sustainable economy by moving beyond business as usual. Guided by our Dow value to protect our planet, we are committed to going beyond our current capabilities and the reach of our products and solutions to pursue game-changing collaborations that will help lead the transition to a sustainable society.

Values, Principles, Standards and Norms of Behavior GRI 102-16, 102-17

At Dow, our commitment to sustainability is integral to Dow’s Vision, Mission and Values – which continue to drive change that is good for the environment, good for people and good for business.

Taken together, the essential elements of Dow’s Vision, Mission, Values and strategy describe why the Company exists, who we are, what we intend to do and how we intend to do it. This critical framework provides insight, offers motivation and determines our path forward as we seek to grow and achieve our goals.

Dow’s Code of Conduct (Code) summarizes the ethical principles and policies intended to deter and prevent corrupt activity such as bribery, and models appropriate ethical conduct. It also provides Dow’s position on a wide array of topics including equal employment opportunity, respect in the workplace and environment, health and safety. All of us at Dow, no matter where we happen to live, are expected to apply these principles in the daily performance of our job responsibilities. Dow’s policy is to be lawful, highly principled and socially responsible in all of its business activities. Dow’s Code sets the ethical standard for Dow and our employees. We are all expected to understand and comply with all Company policies and applicable laws, and to adhere to the guiding principles outlined in the Code. Dow employees must certify compliance with the Code annually.

In September 1998, Dow established its Office of Ethics and Compliance (OEC) to reinforce the Company’s long-standing commitment to ethical business conduct. The OEC communicates the Company’s standards, provides guidance on issues related to ethical conduct and has oversight over mechanisms for action. Staff in this critical area are responsible for administering the Code and promoting practices that maintain an environment in which the Company businesses and workforce are in full compliance with the Code, accepted business practices and internal standards. This includes promoting lawful activity everywhere we do business, as well as helping the Company to manage risk, maintain a positive reputation and avoid litigation. The OEC is expected to stay abreast of the Company’s business goals and cultural climate, as well as facilitate sound and ethical business dealings through education and the establishment of practices that enable the highest possible level of compliance.

Ambition

Become the most innovative, customer-centric, inclusive and sustainable materials science company in the world.



Core Values

- RESPECT FOR PEOPLE
- INTEGRITY
- PROTECTING OUR PLANET



The Code was developed by the OEC and key stakeholders, and approved by Dow’s Board of Directors upon the spin-off of Dow as an independent company on April 1, 2019. The Code will be translated into 16 languages. (For more details on ethics and compliance governance as it existed for Dow as the Materials Science Division of DowDuPont in 2018, refer to disclosures 102-16 and 102-17 on pages 35-37 of the 2017 Dow Sustainability Report.)

More information about ethics and compliance at Dow can be found on our website. Winning in today’s volatile, global marketplace requires sound strategy and disciplined execution. Building on our strengths, we continue to accelerate our market-driven approach – going narrower and deeper into strategically aligned end markets, increasing productivity across our integrated value chains and maximizing the value of our investments.

As outlined in the Code, Dow employees are expected to report potential violations of the Code for investigation and action; contingent staff and other third parties are also encouraged to report ostensibly inappropriate conduct. The OEC is responsible for communicating to all stakeholders the mechanisms that are in place for employees to seek advice and report potential misconduct. These options are communicated in many ways, such as including contact information on Dow’s external website and intranet page, and posting it on the OEC’s ethics and compliance training website, in other communications about training, in the Respect and Responsibility Policy, etc. Dow EthicsLine is a safe, reliable and convenient alternative to reporting ethical concerns in person (by calling or via online form). It is available globally, with multilingual capabilities, 24 hours a day, seven days a week. The Dow EthicsLine is operated by EthicsPoint, a professional vendor located in Lake Oswego, Oregon, USA, that specializes in providing similar services to global companies. No call tracing/tracking of IP addresses or recording devices are ever used, and in some countries, as allowed by local law, callers may remain anonymous. In addition to the EthicsLine, employees may choose to report concerns to their supervisors or other leaders, Dow attorneys, human resources personnel or directly to the OEC. All concerns are evaluated, and all potential Code violations are investigated. Confidentiality is essential in order to maintain the integrity of the investigation; those who participate in good faith are protected from retaliation.

Dow’s policy of no retaliation helps ensure that Dow will not tolerate retaliation against those who raise concerns about improper conduct in good faith or who participate truthfully in an investigation.



Reports and other data about alleged violations of the Code, its underlying policies or the law are provided to the Audit Committee of the Dow Board of Directors quarterly. In 2018, 544 matters were reported to the OEC, 430 of which warranted an investigation. One hundred fifty-eight (37 percent) of the 430 matters were substantiated, 221 (51 percent) matters were unsubstantiated; and the remaining 51 (12 percent) are pending. Types of issues reported included conflicts of interest; environmental, health and safety; human resources; misuse of assets and others. All issues that require corrective action are appropriately addressed.

**Determination of Report Content and Boundaries** **GRI 102-46**

Our process for determining materiality is a continual four-step cycle of identification, prioritization, validation and review.

Defining our material aspects and boundaries for reporting relies on the continuous process that we have used to develop three generations of corporate Sustainability Goals. The process assures 1) we are addressing

Scientists estimate that more than enough solar energy strikes the Earth every hour to power our whole society for an entire year. Dow is helping improve the efficiency and long-term reliability of capturing solar energy with innovations such as ENGAGE™ PV Polyolefin Elastomers (POEs). ENGAGE™ PV POEs are high-performance resins that enable lower system costs, greater power generation and extend the service life of global photovoltaic systems. Selected in 2019 as an Edison Award and R&D 100 Award winner, this technology helps our customers to develop encapsulant films that protect solar cells from degradation, making renewable energy increasingly affordable. It also features superior electrical resistivity and weathering stability, offering exceptional long-term performance and lowering overall energy costs.

material topics, 2) they are aligned with external concepts of sustainability and global challenges, and 3) we have included the impacts of all our activities throughout the scope of our impact, both within our own operations and externally through interactions with suppliers, customers, consumers, communities, the environment and others.

**Identification**

A critical element in the development of the 2025 Sustainability Goals was extensive dialogue with stakeholders on a wide range of topics, which later became the key components of the goals.

One of the external stakeholders was the Sustainability External Advisory Council (SEAC), which since 1992 has been a key contributor to Dow’s outside-in perspective on environment, health and safety, and sustainability issues for the Company. The SEAC played a critical role in developing our 2005 EHS Goals, our 2015 Sustainability Goals and our 2025 Sustainability Goals.

In addition, part of our stakeholder engagement is through our annual Public Policy Issues Prioritization process. Through the Government Affairs, Public Policy, Regulatory Affairs and Issue Management teams, Dow’s Issue & Policy Management Council drives alignment of global issues and policy management strategies, setting priorities, and coordinating efforts and resources.

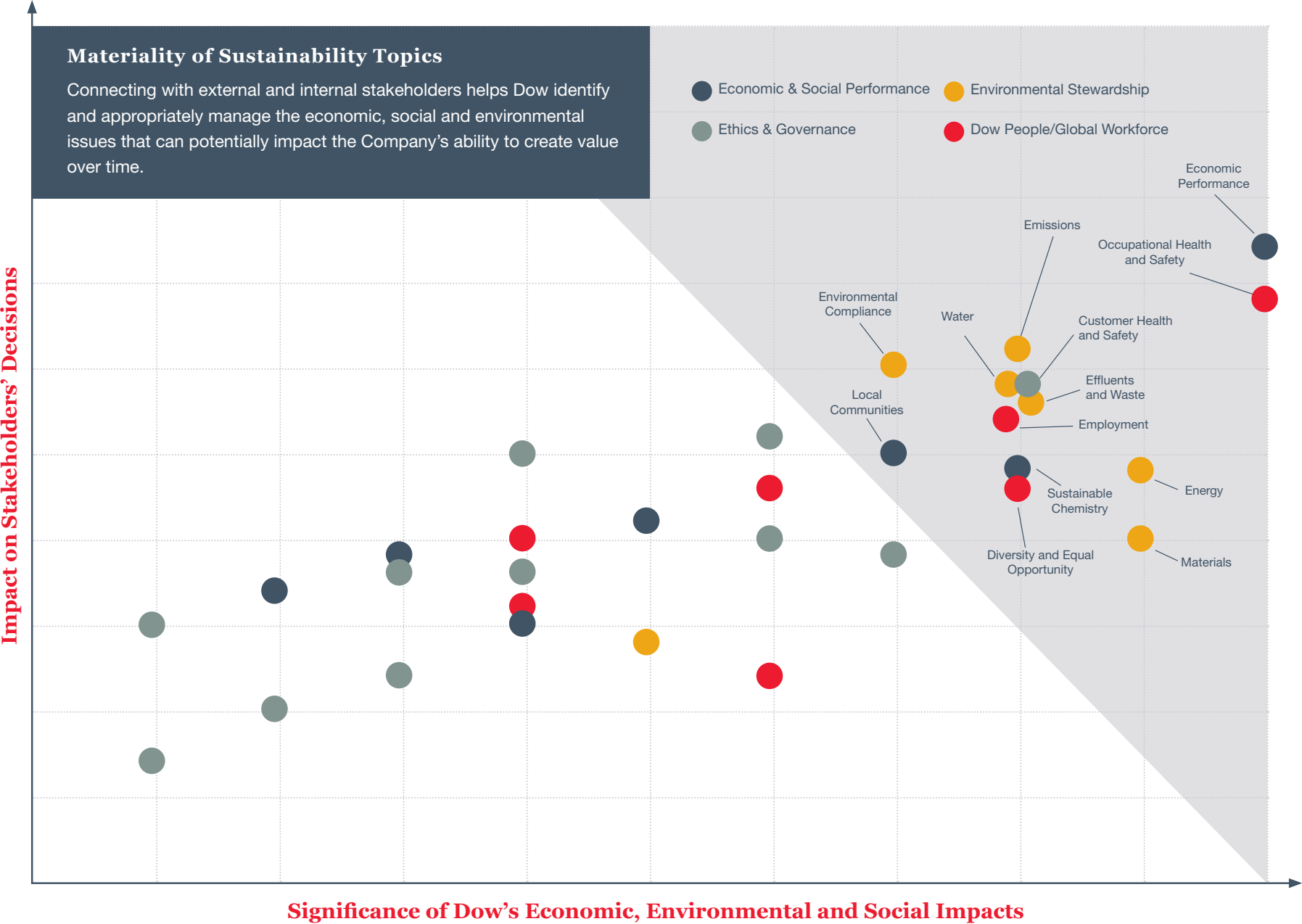
In 2013, as part of building Dow’s next-generation approach to sustainability, we conducted an extensive stakeholder and corporate interview process to identify the issues that are the most important to our stakeholders and most relevant for Dow. More than 300 one-on-one and small group interviews were conducted across the globe with stakeholders, including individuals from non-governmental organizations, academia and governments, as well as the environmental and sustainability communities. Key customers, consumer-facing companies and Community Advisory Panels (CAPs) were also interviewed. More than 500 telephone interviews were conducted to understand and prioritize environmental, social and economic needs in the communities in which Dow has significant operations. Further, individual conversations were conducted with SEAC members, senior leadership and employees in focus groups. Robust analytics and text mining were applied to analyze the extensive data collected through the interview process to assess the importance of issues to stakeholders and to the Company, which resulted in validation and prioritization of the topics.

**Prioritization**

By extending the reach of our scope outside our operations, we understand that each action taken to address the material issues will have broader and long-term impact upstream and downstream of the value chain, which often can be beyond the Company’s direct control. However, to truly understand the pros or cons of our decisions, we weigh them against other options and measure impact over time. Life Cycle Assessment (LCA) is an excellent methodology for examining the total impact of a product or service. Rather than focusing on a single process, LCA takes a holistic view, examining impacts over the complete cradle-to-grave life cycle. A life-cycle perspective helps us prioritize material topics according to their impact given the sustainability context and the influence on stakeholder assessments and decisions. Dow applies life-cycle thinking across the entire portfolio.



The results of the materiality assessment are mapped out below. The vertical axis maps the relative importance of the topics to our stakeholders; the horizontal axis shows the significance of Dow’s economic, environmental and social impacts. **GRI 102-47**



**Validation**

In 2014, as part of building Dow’s 2025 Sustainability Goals, a series of scenario-based probabilistic analyses were performed to evaluate the direct and indirect value, intangible value and externality (i.e., borne by society) value of Dow’s sustainability activities. The approach is an extension of a method that was originally developed by Dow and several other companies, as well as the American Institute of Chemical Engineers (AIChE). The analyses show that Dow’s sustainability activities will bring significant benefits to Dow from growing top-line and bottom-line value by improving reputation, increasing human capital return and improving resilience. The analyses also show that many external stakeholders will receive mutual benefits from Dow’s sustainability activities, such as reducing environmental impacts, increasing ecosystem value and improving life quality.

For example, as highlighted by the Carbon Disclosure Project, despite having no federal regulatory price on carbon in the United States, Dow is one of the pioneer companies incorporating a carbon price into its business planning and risk management strategies. The price of carbon is included in the Company’s internal calculations used for prioritizing capital projects. Another example is the results of the collaboration between Dow and The Nature Conservancy (TNC) on valuing ecosystem services, which are demonstrating that protecting nature can be both a global business strategy and a Company priority. By combining the resources and expertise of two organizations, we are integrating the value of nature into Dow’s business decision-making.

**Review**

After having prioritized the material issues, the process at Dow becomes not only a process to decide the content of Dow’s Sustainability Report, but also an important element for the Company to repetitively incorporate sustainability into its strategy and leverage existing resources for sustainable value creation.

Following the separation of Dow from DowDupont in 2019, the Company plans a comprehensive review of the materiality of sustainability topics.

**Key Impacts, Risks and Opportunities GRI 102-15, GRI 102-29, GRI 102-30**

Dow’s impact through the products we produce is far-reaching. The Company’s research and development efforts are essential to Company growth and future success. The Company is engaged in a continuous program of basic and applied research to develop new products and processes, to improve and refine existing products and processes, and to develop new applications for existing products. Research and development (R&D) expenses were \$1.536 billion in 2018. As of December 31, 2018, the Company employed 6,730 people in R&D activities. Our industry-leading development engine is continuing to produce products each year that enable growth of the Company and solve world challenges. Dow’s commercial teams align the Company’s capabilities with opportunities in the marketplace, including those that enable solving the sustainability challenges of customers and consumers. Refer to the Corporate Citizenship section starting on page 69 for details about the Company’s impact on communities where we have operations.

Risk management is considered to be a strategic activity within Dow and our ability to manage risk creates opportunity as well. Corporate-level identification and management of risk is systematically accomplished using an Enterprise Risk Management approach. The Board of Directors is responsible for overseeing the overall risk management process. Committees of the Board and the Board as a whole participate in the oversight of the process. The Audit Committee ensures there is a risk management process and it is being followed. Responsibility for managing risk rests with executive management. Examples include the potential impact of weather-related events, access to credit, effect of foreign currency exchange rate movements, and volatility in purchased feedstock and energy costs. Risk management results are regularly communicated to the chief financial officer with a formal annual review with the Board of Directors and the Audit Committee.

**Global Economic Considerations:** The Company operates in a global, competitive environment, which gives rise to operating and market risk exposure. The Company sells its broad range of products and services in a competitive, global environment, and competes worldwide for sales on the basis of product quality, price, technology and customer service. Increased levels of competition could result in lower prices or lower sales volume, which could have a negative impact on the Company’s results from operations. Sales of Dow’s products are also subject to extensive federal, state, local and foreign laws and regulations, trade agreements, import and export controls,



and duties and tariffs. The imposition of additional regulations, controls, and duties and tariffs, or changes to bilateral and regional trade agreements could result in lower sales volume, which could negatively impact the Company's results from operations.

Economic conditions around the world, and in certain industries in which the Company does business, also impact sales price and volume. As a result, market uncertainty or an economic downturn in the geographic regions or industries in which Dow sells its products could reduce demand for these products and result in decreased sales volume, which could have a negative impact on the Company's results from operations.

In addition, volatility and disruption of financial markets could limit customers' ability to obtain adequate financing to maintain operations, which could result in a decrease in sales volume and have a negative impact on the Company's results from operations. Dow's global business operations also give rise to market risk exposure related to changes in foreign exchange rates, interest rates, commodity process and other market factors, such as equity prices. To manage such risks, Dow enters into hedging transactions pursuant to established guidelines and policies. If Dow fails to effectively manage such risks, it could have a negative impact on the Company's results of operations.

**Raw Materials:** Availability of purchased feedstock and energy, and the volatility of these costs, impact Dow's operating costs and add variability to earnings.

Purchased feedstock and energy costs account for a substantial portion of the Company's total production costs and operating expenses. The Company purchases hydrocarbon raw materials including ethane, propane, butane, naphtha and condensate as feedstocks and also purchases certain monomers, primarily ethylene and propylene, to supplement internal production, as well as other raw materials. The Company also purchases natural gas, primarily to generate electricity, and purchases electric power to supplement internal generation.

Feedstock and energy costs generally follow price trends in crude oil and natural gas, which are sometimes volatile. While the Company uses its feedstock flexibility and financial and physical hedging programs to help mitigate feedstock cost increases, the Company is not always able to immediately raise selling prices. Ultimately, the ability to pass on underlying cost increases is dependent on market conditions. Conversely, when feedstock and energy costs decline, selling prices generally decline as well. As a result, volatility in these costs could impact the Company's results of operations.

**Environmental Compliance:** The costs of complying with evolving regulatory requirements could negatively impact the Company's financial results. Actual or alleged violations of environmental laws or permit requirements could result in restrictions or prohibitions on plant operations, substantial civil or criminal sanctions, as well as the assessment of strict liability and/or joint and several liability.



# Striving to Meet the Needs of All Stakeholders

What do Americans want to see most from its biggest businesses? According to JUST Capital and *Forbes*, which surveyed 81,000 people, the answers include fair pay for workers, quality products, ethical and diverse leadership, minimized environmental impact, customer treatment, community support and job creation, among other priorities. They then ranked 890 of the largest publicly traded companies to determine the best actors. In 2018, DowDuPont was the only company in the chemical industry to achieve top 100 status. On average, JUST 100 companies emit 72 percent fewer greenhouse gases and 80 percent less fossil fuel per dollar of revenue and employ 38 percent more people. From creating high-quality jobs and supporting the communities in which we operate to delivering long-term financial growth, we are committed to meeting the needs of all of our stakeholders.

“  
By driving innovations that protect life and the environment, we will continue to create sustainable economic value.  
Howard Ungerleider, vice president and chief financial officer, Dow

The Company is subject to extensive federal, state, local and foreign laws, regulations, rules and ordinances relating to pollution, protection of the environment, greenhouse gas emissions, and the generation, storage, handling, transportation, treatment, disposal and remediation of hazardous substances and waste materials. In addition, the Company may have costs related to environmental remediation and restoration obligations associated with past and current sites, as well as related to the Company's past or current waste disposal practices or other hazardous materials handling. Although management will estimate and accrue liabilities for these obligations, it is reasonably possible that the Company's ultimate cost with respect to these matters could be significantly higher, which could negatively impact the Company's financial condition and results of operations. Costs and capital expenditures relating to environmental, health or safety matters are subject to evolving regulatory requirements and depend on the timing of the promulgation and enforcement of specific standards that impose the requirements. Moreover, changes in environmental regulations could inhibit or interrupt the Company's operations, or require modifications to its facilities. Accordingly, environmental, health or safety regulatory matters could result in significant unanticipated costs or liabilities.

**Health and Safety:** Increased concerns regarding the safe use of chemicals and plastics in commerce and their potential impact on the environment, as well as perceived impacts of plant biotechnology on health and the environment, have resulted in more restrictive regulations and could lead to new regulations.

Concerns regarding the safe use of chemicals and plastics in commerce and their potential impact on health and the environment, and the perceived impact of plant biotechnology on health and the environment, reflect a growing trend in societal demands for increasing levels of product safety and environmental protection. These concerns could manifest themselves in stockholder proposals, preferred purchasing, delays or failures in obtaining or retaining regulatory approvals, delayed product launches, lack of market acceptance and continued pressure for more stringent regulatory intervention

and litigation. These concerns could also influence public perceptions, the viability or continued sales of certain of the Company's products, the Company's reputation and the cost to comply with regulations. In addition, terrorist attacks and natural disasters have increased concerns about the security and safety of chemical production and distribution. These concerns could have a negative impact on the Company's results from operations.

Local, state, federal and foreign governments continue to propose new regulations related to the security of chemical plant locations and the transportation of hazardous chemicals, which could result in higher operating costs.

**Operational Event:** A significant operational event could negatively impact the Company's results from operations.

As a diversified chemical manufacturing company, the Company's operations, the transportation of products, cyberattacks, or severe weather conditions and other natural phenomena (such as freezing, drought, hurricanes, earthquakes, tsunamis, floods, etc.) could result in an unplanned event that could be significant in scale and could negatively impact operations, neighbors or the public at large, which could have a negative impact on the Company's results from operations.

Major hurricanes have caused significant disruption in Dow's operations on the U.S. Gulf Coast, logistics across the region and the supply of certain raw materials, which had an adverse impact on volume and cost for some of Dow's products. Due to the Company's substantial presence on the U.S. Gulf Coast, similar severe weather conditions or other natural phenomena in the future could negatively impact the Company's results from operations.

**Cyber Threat:** The risk of loss of the Company's intellectual property, trade secrets or other sensitive business information, or disruption of operations could negatively impact the Company's financial results.

Cyberattacks or security breaches could compromise confidential, business-critical information, cause a disruption in the Company's operations or harm the Company's reputation. The Company has attractive information assets, including intellectual property, trade secrets and other sensitive, business-critical information. While the Company has a comprehensive cybersecurity program that is continuously reviewed, maintained and upgraded, a significant cyberattack could result in the loss of business-critical information and/or could negatively impact operations, which could have a negative impact on the Company's financial results.





It has become increasingly clear that meeting the challenges of the United Nations Sustainable Development Goals will be the most important business opportunity of our generation, and Dow has an important role in this process.

Jim Fitterling, chief executive officer, Dow



## Alignment to UN Sustainable Development Goals

Dow’s 2025 Sustainability Goals were developed at the same time and with an awareness of the process for defining the UN Sustainable Development Goals (SDGs). At some level, our 2025 Sustainability Goals will impact each of the 17 UN SDGs. We strive to understand our potential to contribute to a more sustainable society by identifying several different ways that we are aligned and how that alignment can support business goals and our ambition to be the most sustainable materials science company in the world. High-level alignments to the SDGs are described here, and the more important connections to individual sub-goals are identified throughout the report.



### SDGs that are an opportunity for Dow to lead



There are a few goals that Dow and the chemical industry have the ability to make a large impact on or lead. Dow has the global reach, expertise and connections to drive significant solutions. Dow’s assessment of the SDGs in this category aligns well with the World Business Council for Sustainable Development’s chemical sector SDG roadmap.



### SDGs that present business opportunities and risks

#### Business Opportunity



#### Business Risk



Some of the goals present either a business opportunity or a business risk. It is important that our commercial teams understand the sustainable development-driven changes coming in the markets that they serve. In some cases, these changes might lead to product deselection. In others, new and growing markets present opportunities for innovative Dow products to enable sustainable development.



### SDGs that are an opportunity to engage and contribute



The second category of SDG alignment are those goals where Dow is not able or expected to take the lead, but where we can engage and make positive contributions. An example is Goal 5 – Gender Equality. Dow engages through our Inclusion & Diversity efforts and has a strong record of providing equal opportunities to women and men.



### SDGs that Dow has a current negative impact on



Finally, there are a few of the SDGs that highlight where the current impact of Dow’s products or operations could be seen as inconsistent with the achievement of the goal. The clearest example of this is Goal 12 – Responsible Consumption and Production. Dow, as one of the world’s largest plastics producers, has chosen to take the lead in efforts to solve the significant challenge of plastic waste in the environment.



# Plastic waste is a threat to our planet when it enters the environment.

## Plastics in the Environment

Extremely versatile and lightweight, plastics have helped improve living standards, hygiene and nutrition around the world. Plastics packaging, for example, greatly extends the shelf life of food and reduces spoilage from farm to table. By introducing light but durable plastic materials, vehicles now are more fuel efficient, produce fewer carbon dioxide emissions, and are safer and more comfortable.

However, used plastics have become an environmental challenge, especially in our oceans. In fact, Ocean Conservancy estimates that as much as 150 million metric tons of plastics are circulating in our oceans right now – and humans are adding another 8 million metric tons of plastics to the ocean every year. As one of the world's largest producers of plastics used in packaging, Dow is working on several fronts to help bring solutions to this challenge.

Our strategy to address plastic waste has circular economy solutions at its center, driven by our strong belief that plastic is simply too valuable to be lost as waste. It is aligned around three pillars:

1. We will work to keep plastic out of the environment.
2. We will deliver circular economy solutions.
3. We will increase impact through partnerships.



### UN SDG ALIGNMENT

Dow has the opportunity to lead and make a large impact on UN SDG 12.1: "Implement the 10-year framework programmes on sustainable consumption and production, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries."

## Working to Keep Plastic Waste Out of the Environment

We are collaborating with government, NGOs, value chain partners, customers and other stakeholders to help make all stages of the plastics life cycle work more effectively.

**Implementing Operation Clean Sweep (OCS):** Dow is a pledged partner in the American Chemistry Council's Operation Clean Sweep, an international program designed to prevent and help keep plastic litter materials out of the marine environment. To protect the environment and save valuable resources, Dow is embedding audit-ready zero-pellet-loss principles in manufacturing and logistics projects through OCS Blue qualification at all Dow sites. We will begin reporting pellet loss into the environment in our annual sustainability report in 2020.

**Creating classrooms from recycled plastic bricks:** Students need the right environment to learn, but in many developing countries, children are squeezed into overcrowded classrooms, classrooms that are falling apart, or are learning outside. In collaboration with the start-up and technology owner, Conceptos Plasticos, Dow is helping to build sustainable classrooms using self-assembling bricks made out of recycled plastic. This innovative process tackles two global issues – plastic waste and a lack of adequate classrooms – while creating a more circular economy.



### UN SDG ALIGNMENT

This initiative is an example of Dow engaging and contributing to sub-goals. In this case, both 4.6 and 4.8. Dow's support is providing education facilities that help achieve literacy and numeracy and contributing to the reduction of plastic waste at the same time.

**Improving roads with recycled plastic:** Dow is helping pave the way to a more sustainable future by working with governments and value chain collaborators to construct polymer-modified asphalt (PMA) roads with post-consumer recycled plastic. The roads reduce plastic in the environment while supporting improved performance and reduced materials costs. In addition, the greenhouse gas emissions are lower compared to traditional paving processes. With projects in Indonesia, India, Thailand and North America, Dow already has laid more than 26 miles of PMA pavement – diverting more than 220,000 pounds of waste from landfills.

**Enhancing waste management while helping create jobs:** Citizens in South Africa are beginning to see plastic waste as not just trash, but a valuable resource and potential source of income. Through collaborations with non-profit organizations and local communities, Dow is working to inspire better waste management through education, clean-ups and innovation-focused initiatives. Through our Business Impact Fund, we worked with an NGO to launch Clean My City, a project aimed at helping empower local entrepreneurs ("wastepreneurs") to generate income by collecting, sorting and recycling waste. This program enables plastic materials to be repurposed, promotes a cleaner environment and engages communities in proper waste management.

## Delivering Circular Economy Solutions

To help advance a circular economy, Dow is committed to sustainable innovation to meet the demand for more recyclable options. Our portfolio and activities include:

- Products that can be easily recycled
  - Compatibilizers that offer the recycling of non-compatible material combinations
  - Innovative resins to allow combinations with recycled content without losing functional performance or significantly increasing weight
- Incorporating recycled content in the products we sell to customers
- Helping to develop options for improving the quality of recycle from flexible packaging



### UN SDG ALIGNMENT

Dow people, expertise and global reach put us in position to lead on innovating solutions to sustainable recycling options. This contributes to sub-goal 12.5: "By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse."

As a founding partner of the Sustainable Packaging Coalition, Dow has helped initiate a store drop-off program for hard-to-recycle plastics in 2017. Today, more than 30,000 products carry the How2Recycle logo.

## Increasing Impact Through Collaboration

Dow is playing a lead role in the formation of global alliances to advance solutions that eliminate plastic waste in the environment, especially in the ocean.

- Dow is a founding member of the Alliance to End Plastic Waste, a newly formed organization committing more than \$1 billion with the goal of raising \$1.5 billion over the next five years to develop and scale solutions that manage plastic waste and promote post-use solutions of plastic. The Alliance, currently comprised of nearly 30 companies, will develop and bring to scale solutions that will minimize and manage plastic waste and promote solutions by transitioning to a circular economy for plastics.
- In 2018, Dow became a founding investor in Circulate Capital's \$100 million effort to incubate and finance companies and infrastructure that prevent waste in oceans. Circulate Capital's mission is to demonstrate the viability of investment in the waste management and recycling sectors. The goal is to attract the institutional investment capital needed to scale integrated recycling and waste management infrastructure across South and Southeast Asia.
- Dow intends to donate an additional \$1 million to Ocean Conservancy over the next two years to support waste collection and recycling solutions in Southeast Asian countries. This money would be used for projects that build the capacity of local NGOs and partnerships with city leaders to develop, scale and replicate waste management solutions. Dow's latest \$1 million donation to Ocean Conservancy builds upon the long-standing 30-year relationship between the organizations.
- Dow continues to engage with existing NGO partners such as The Nature Conservancy, the Ellen MacArthur Foundation, Keep America Beautiful and others to help drive circular economy solutions.



Climate Change GRI 201-2

Governance

At Dow, the Sustainability Team is charged to identify material sustainability risks and opportunities, including climate-related issues, and reports to the Board every quarter. The Executive Sustainability Team also monitors the progress made on the Company’s 2025 Sustainability Goals, which include the following climate-related goals:

- Dow will obtain 750 MW of its power demand from renewable sources by 2025.
- Though we will grow globally over the next 10 years, Dow’s absolute greenhouse gas emissions will not exceed our 2006 baseline.

During 2018, the Carbon Envelope was formed to proactively drive all aspects of the Company’s initiatives around carbon and emissions ensuring global competitiveness and our continued industry leadership in a lower-carbon future.

The Carbon Envelope is an initiative that has a close collaboration across all of our businesses, functions and geographies. The Carbon Envelope has been tasked with key deliverables that include integrating a carbon outlook into the Company’s growth strategy, evaluating technologies to reduce absolute CO<sub>2</sub> emissions, reducing carbon intensity, developing and implementing a global advocacy framework on a regional basis, and integration with long-term business and site-specific strategies. Alignment

to Dow’s 2025 Sustainability Goals and the UN Sustainable Development Goals are important to this effort.

To help meet our goals, a working group analyzed the various climate change scenarios and developed implementation strategies. These scenarios then were reviewed with the Carbon Envelope in conjunction with the Executive Sustainability Team. The working group is in charge of deploying our strategies based on the implementation scenarios. Four boundary scenarios were considered, and the impacts to Dow were evaluated at a high level (see chart on the left).

Strategy

Dow’s Hydrocarbons & Energy business, Public Affairs and Sustainability functions are tasked with developing and implementing a comprehensive strategy that addresses the potential challenges of energy security and GHG emissions for the Company. At Dow, we believe all solutions in Energy (whether technology-based or policy-based) must address five areas: 1) sustainability (environmental impact), 2) societal demands – including political realities, 3) chemistry and physics (what is possible with existing technologies until we innovate better ones), 4) reliability including infrastructure limitations and grid design, and 5) affordability.

Dow’s Hydrocarbons & Energy business and Carbon Envelope are deliberately staffed to synthesize expertise from all five areas. We are convinced that meaningful solutions and true progress can only be achieved by addressing each.

Climate Change Scenarios

	Hot Air	Pollution Mitigation	Carbon Cap	Carbon Tax
Description	<ul style="list-style-type: none"><li>• World energy grows at historic rate and with the same fuel mix</li><li>• Temp increase of 6°C above pre-industrial levels</li></ul>	<ul style="list-style-type: none"><li>• China: aggressive coal reduction and NG growth</li><li>• Less polluting fossil fuels in residential and transportation</li></ul>	<ul style="list-style-type: none"><li>• Temp increase below 2°C</li><li>• Global cap on carbon emissions</li><li>• Digital and technological innovation</li></ul>	<ul style="list-style-type: none"><li>• U.S. implements a \$40/ton CO<sub>2</sub> wellhead tax</li><li>• Import tariff retaliation from EU – China</li><li>• Global policies fractured</li></ul>
2040 Fuel Mix	<p>Demand: 840 PJ</p>	<p>Demand: 840 PJ</p>	<p>Demand: 620 PJ</p>	<p>Demand: 790 PJ</p>
Energy Demand Growth	40%	40%	10%	33%

Sources for fuel mix:

- Hot Air: International Energy Agency, Energy Technology Perspectives 2015 – <https://www.iea.org/etp/etp2015/> – 6D Scenario.
- Pollution Mitigation: Dow analysis.

• Carbon Tax: MIT Joint Program on the Science and Policy of Global Change.

- Carbon Cap: International Energy Agency, Energy Technology Perspectives 2015 – <https://www.iea.org/etp/etp2015/> – 2D Scenario.





Climate-Related Risks and Opportunities

Climate-Related Risks and Opportunities			Potential impacts on business						Potential financial impacts				Potential opportunities						
			Inability to do business	Disruption in production capacity and shipment	Fines and reputational damages	Increased operating costs	Early write-off of assets	Reduced demand for products	Revenues	Expenditures	Assets /liabilities	Capital	More efficient production processes	Diversify business activity	Emergence of new technologies	Climate adaptation markets product solutions	Lower emission and renewable sources of energy	Participating in carbon market	Resource diversification
Type	Climate-related risks	Horizon																	
Transitional	Policy and legal																		
	Increased pricing of GHG emissions	>				■				■		■	■		■		■	■	■
	Enhanced emissions reporting obligations	>								■						■	■		
	Exposure to litigation	>			■	■				■					■			■	
	Technology																		
	Substitution of existing products with lower-emission options	>						■	■		■	■			■	■			■
	Markets																		
	Changing customer behavior	> >					■	■	■					■	■				
	Uncertainty in market signals	> >					■	■	■					■					■
	Reputation																		
Shift in consumer preferences	> >	■					■	■	■			■		■		■		■	
Stigmatization of sector	>	■						■	■		■			■		■		■	
Physical	Acute																		
	Tropical cyclones	>		■		■	■		■	■		■				■			
	Change in precipitation extremes/droughts	>		■					■	■		■				■			
	Chronic																		
	Change in precipitation pattern	> > >	■	■						■		■				■			
	Rising sea level	> > >	■	■			■			■		■				■			
	Rising mean temperature	> > >	■	■						■		■				■			

The risks matrix above is an overview of the identified climate-related risks and opportunities and their potential financial impact on Dow, over the short, medium and long term.

Risk Management

Climate change is an important matter for Dow. We understand that changes will be driven by regulations, public policy and physical climate parameters.

**Regulatory Matters:** Today, 36 countries representing around 23 percent of global GHG emissions are subject to carbon pricing. The debate on regulatory frameworks to reduce carbon emissions generally revolves around two concepts: an emissions trading system (ETS) or a carbon tax. The potential implications of these issues are all very similar, including increased cost of purchased energy, additional capital costs for installation or modification of GHG-emitting equipment, and additional direct

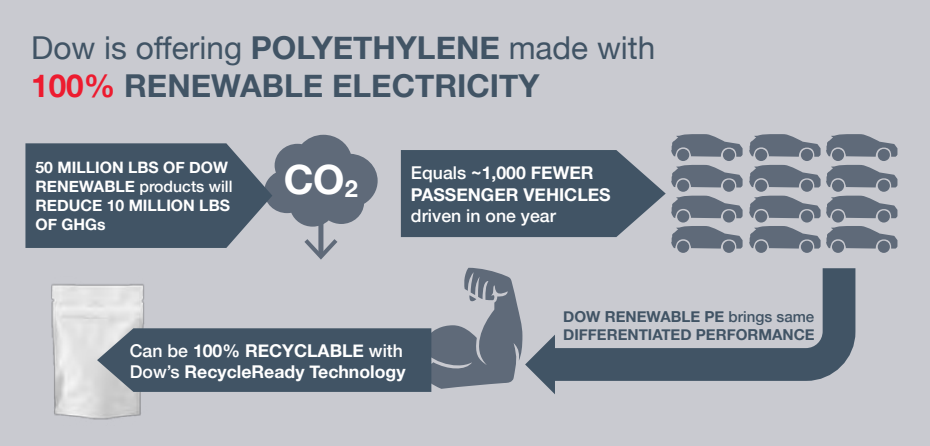
costs associated with GHG emissions, which are primarily related to energy use. It is difficult to estimate the potential impact of these regulatory matters on energy prices.

Reducing Dow’s overall energy usage and GHG emissions through new and unfolding projects will decrease the potential impact of these regulatory matters. Dow also has a dedicated commercial group to handle energy contracts and purchases, including managing emissions

trading. The Company has not experienced any material impact related to regulated GHG emissions to date but continues to evaluate and monitor this area for future developments.

**Physical Climate Parameters:** Dow believes in the scientific consensus that climate change caused in part by increasing GHGs from human activity has serious consequences for the planet and society if left unaddressed. We support the Paris Agreement and are committed to achieving its goal of keeping global temperature rise below 2°C. At this point, it is difficult to predict and assess the probability of potential risks related to climate change trends on Dow specifically. Concerns have been raised that climate change may result in more frequent incidents of severe weather and the potential for rising sea levels. In the past, major hurricanes have caused significant disruption in our operations on the U.S. Gulf Coast, logistics across the region, and the supply of certain raw materials, which had an adverse impact on volume and cost for some of Dow’s products. To mitigate risks associated with severe weather, we have engineered the facilities to better withstand these events. Additionally, these sites have specific emergency preparedness plans that detail actions to take in the event of severe weather. Historically, these activities and associated costs are driven by normal operational preparedness. Dow continues to study the long-term implications of changing climate parameters on water availability, plant siting issues, and impacts and opportunities for products.

Although we may face risks associated with climate change, opportunities also arise. Despite having no federal regulatory price on carbon in the U.S.,



Dow is one of the pioneer companies incorporating a carbon price into its business planning and risk management strategies. The price of carbon is included in the Company’s internal calculations used for prioritizing capital projects. In addition, it also offers opportunities to develop solutions for climate adaptation.

**Climate Adaptation Market:** A large part of our product portfolio helps address global challenges: food availability; energy supply; climate change and energy efficiency; water availability and quality; nature, natural capital, ecosystem services and biodiversity; and human health.

Dow innovations are already at work improving people’s lives around the world – making clothes fresher, foods healthier, water cleaner, medicines more effective and homes more energy-efficient. And that’s just the beginning of our growing portfolio of solutions. As part of our 2025 Sustainability Goals, Dow will maintain GHG emissions below 2006 levels on an absolute basis for all GHGs. But the widespread impact of climate change extends well beyond energy production. It creates huge markets for Dow’s products and solutions. Through our science and technology capabilities, we are committed to bringing solutions to enable a sustainable energy future by producing products that help others reduce GHG emissions.

- DOWTHERM™ A heat transfer fluid is used in more than 40 large, concentrating solar power plants, with a total capacity of more than 700 megawatts. These plants will provide enough electrical generation capacity to meet the needs of more than 1 million homes at a savings of close to 4 million metric tons of carbon dioxide emissions per year.
- Dow Packaging and Performance Plastics launched in 2018 a renewable energy-made polyethylene in the United States that has 13.8 percent fewer GHG emissions per pound of product than the industry-average polyethylene; this helps reduce Scope 3 emissions for our customers.
- Buildings account for 17-40 percent of total energy consumption. DOWSIL™ silicone sealants and structural glazing products contribute to the reduction of energy use and carbon emissions from buildings and achievement of LEED certification. Flexible anchors provided by DOWSIL™ silicone structural glazing systems minimize air infiltration, resulting in the potential for more energy-efficient performance. Thermal modeling programs demonstrate the thermal gains of silicone bonding in residential window manufacturing. With longer life cycles and application durability than their petroleum-based organic counterparts, silicones



resist natural breakdown from environmental factors. With more than 40 years of proven performance, Dow silicone sealants have been used in building envelope, curtainwall and weatherproofing applications to withstand hurricanes, earthquakes, acid rain, typhoons and extreme humidity, heat and freeze conditions.

Building a low-carbon future – delivering impact through the partnership of sports and science

Dow is delivering technologies and solutions that are more energy-, resource- or carbon-efficient for different end markets. The Company is well-positioned to collaborate with businesses in the value chain to support sustainability goals. Given its Worldwide Partnership with the International Olympic Committee (IOC) and Dow’s more than three decades of Sustainability Goals experience, the global stage of the Olympic Movement is a natural stage to help drive a transition to a low carbon economy.

17

Partnerships for the Goals

**UN SDG ALIGNMENT**

The IOC – Dow collaboration is an example of Target 17.17: “Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.”

Underlying the Dow-IOC Carbon Partnership is both Dow and the IOC’s commitment to playing a part in contributing to the United Nations (UN) General Assembly’s 2030 Agenda for Sustainable Development and the 17 Sustainable Development Goals (SDGs). The SDGs provide a common framework for public and private actors to implement actions to contribute to sustainable development.

Dow’s carbon mitigation program with the Olympic Movement started with the programs implemented by Dow and the Organizing Committees of the Olympic Games Sochi 2014 and Rio 2016. In late 2017, we built on the success of these programs and extended the reach and influence of our collaboration to a global scale with the appointment of Dow as the Official Carbon Partner of the IOC.

Through these combined efforts, the programs have already delivered greenhouse gas (GHG) reductions of 4.3 million metric tons of carbon dioxide equivalent (CO<sub>2</sub>e). By 2026, the reductions from these programs are projected to exceed 6 million metric tons of CO<sub>2</sub>e. Many of these projects also have delivered new efficiencies and value for participating businesses as well as reduced carbon emissions along industry value chains. Dow published its third-party verified 2018 Carbon Report in September 2018, detailing the successes and lessons learned from implementing carbon-mitigation projects.

The carbon partnership with the IOC has the goal to deliver third party verified greenhouse gas

reductions (i) to balance the operational carbon footprint of the IOC from 2017-2020; and (ii) deliver a positive carbon legacy by encouraging the adoption of low-carbon solutions in the industry value chain. Already 320,000 MT CO<sub>2</sub>e carbon savings have been delivered from the first project implemented. One year after the announcement of Dow-IOC Carbon Partnership, the IOC’s estimated operational carbon footprint is expected to be balanced by Dow initiatives until 2020.

Collaborations in the Construction Value Chain

In 2018, Dow had success engaging the construction value chain, with a focus on exploring carbon-mitigation projects within the built environment.

Building and construction together still account for 36 percent of global final energy use and 39 percent of energy-related CO<sub>2</sub> emissions when upstream power generation is included.<sup>1</sup> Over the next 40 years, the world is expected to build 230 billion square meters in new construction. This is roughly equivalent to adding another

A Journey of Collaboration

Partner	Program Activity Period	Emission Type to Offset/Mitigate	Carbon Mitigation Target MT CO <sub>2</sub> E	Additional/Non-Binding Objective	End of Reporting Period	Results MT CO <sub>2</sub> E
SOCHI 2014 Organizing Committee	2012-2014	Partner-Owned Emissions	360,000		2024	2,591,803
	2013-2014	Associated Spectator Travel Emissions	161,000		2014	161,000
RIO 2016 Organizing Committee	2014-2016	Partner-Owned Emissions	500,000		2026	500,000
	2014-2016	Associated Spectator Emissions		1,500,000 <sup>2</sup>	2026	733,677
International Olympic Committee	2017-2020	Partner-Owned Emissions	To be announced <sup>3</sup>		2026	320,000
		Climate Positive Legacy				–
TOTAL DELIVERED AS OF AUGUST 15, 2018						4,306,480

<sup>1</sup> As of August 2018. Verified by Environmental Resources Management.  
<sup>2</sup> Dow/Rio 2016 non-binding aspirational goal.  
<sup>3</sup> The first IOC carbon footprint report was released in 2018.

Paris to the planet every single week.<sup>2</sup> This rapid development directly correlates to rising energy use and CO<sub>2</sub> emissions.

Dow has initiated two partnerships in an attempt to identify collaborations and reduce embodied and operational carbon emissions in buildings. We are collaborating with the American Institute of Architects – International Region (AIA-IR) to help advance the implementation of sustainable solutions in the built environment and reduce GHG emissions worldwide. We are jointly presenting a Sustainable Future Award, sponsored by Dow until 2020, as part of the AIA-IR’s annual awards.

Together with the U.S. Green Building Council (USGBC), Dow also announced a Carbon Challenge to further encourage reductions in operational carbon footprint of buildings. Office buildings and shopping centers greater than 20,000 square meters that have reduced their carbon emissions and improved energy efficiency beyond business as usual will be recognized with the Carbon Challenge Award.

For its groundbreaking leadership in finding innovative ways to enable a low carbon economy, Dow earned a first-place medal in the Innovations for High-Performance Buildings and Communities category of the National Institute of Building

Sciences (NIBS) 2018 Beyond Green™ High Performance Building and Community Awards. The NIBS Beyond Green™ Awards honor initiatives that are shaping the high-performance building market and catalyzing real-world application of innovative design and construction practices.

<sup>1</sup>UN Environment, Global Status Report 2017  
<sup>2</sup>UN Environment, Global Status Report 2017

# Old Mattresses Find a New Life

Every year, 30 million mattresses are disposed of in the European Union alone, and the vast majority are either landfilled or incinerated. That’s enough mattresses to fill Wembley Stadium in London 25 times. One reason more mattresses aren’t recycled is it is expensive to do so. To help put a dent in this mountain of mattress waste, we are working with H&S Anlagentechnik in Europe to develop a commercially viable method for recycling polyurethane mattresses. In addition to working with collaborators to put in place collection and processing stations, Dow and H&S are seeking to convert flexible polyurethane foam to polyols that conform to REACH standards, have consistent properties between batches and can be processed like existing materials. These attractively priced polyols then would be turned into other products. By working alongside partners that share our resolve to advance a circular economy, we can help free up landfill space and sleep better for it.



Stakeholder Engagement

Stakeholder Engagement

Stakeholder analysis helps identify and evaluate stakeholders that can and do impact or influence the Company’s strategy and reputation, as well as contribute to identification of material risks and opportunities. The intentional effort is to identify stakeholders who can drive, block or shape the discourse around sustainability. In addition, those who are affected may then influence how this discourse ultimately impacts Dow. Through keeping up with current perspectives, more successful issues management and government affairs efforts are accomplished, helping to avoid negative impacts for the Company’s businesses.

Stakeholder Engagement GRI 102-40, GRI 102-42, GRI 102-43, GRI 102-44

Stakeholder Groups	Mechanism for Engagement	Typical Frequency	Key Topics of Interest
Advocacy and Advisory Groups (e.g., Sustainability External Advisory Council)	Meetings, email communications	Monthly	Progress on Dow’s 2025 Sustainability Goals, advice on how to address sustainability issues; site production performance and employment trends; environmental impacts, community health impacts and needs, etc.
Communities (e.g., Community Advisory Panels, United Way, Habitat for Humanity, Keep America Beautiful)	Meetings, social media	Monthly	Site financials, shipments and employment trends; environmental impacts, community health impacts and needs, etc.
Customers	Events, meetings, emails, surveys, social media	Daily	Market trends, technology needs, opportunities, requirements
Employees	Surveys, emails, Global Employee Opinion and Action Survey, Employee Resource Groups, Sustainability Network	Daily	Company’s strategy, Dow’s 2025 Sustainability Goals progress, engagement
Investment Professionals	Calls, emails, media, meetings	Daily	Market trends, Company’s financial performance, risk management
Industry and Trade Associations/ Consortiums (see GRI 102-13)	Meetings, emails, conferences	Monthly	Key industry issues, opportunities, collaborations and partnership opportunities
Academia	Panels, meetings, research projects, internships, social media, awards	Monthly	Research, Dow’s 2025 Sustainability Goals progress, opportunities, workforce development
Shareholders	Meetings, mail, media	Daily	Company’s financial performance, risk management
NGOs and Think Tanks (e.g., The Nature Conservancy, Ocean Conservancy)	Visits, meetings, emails, calls, social media	Monthly	Industry issues, opportunities, collaboration and partnership opportunities.
Regulators	Meetings, emails, calls	Monthly	Company’s environmental and social impacts
Suppliers	Calls, emails, surveys	Daily	Value chain insights, limitations, opportunities

List of Stakeholder Groups

Stakeholder engagement takes place in a variety of other ways throughout the year. The fundamental principles of Dow’s on going sustainability stakeholder engagement strategy focus on three areas: 1) information sharing and disclosure; 2) participating in active dialogue; and 3) collaborating on issues of mutual interest. The overall purpose of engagement is to advance the most appropriate business objectives while building Dow’s reputation. The engagements described were not undertaken specifically as part of the report preparation process but as part of our ongoing engagements.

Some examples of intentional and purposeful listening to stakeholders occur through the following:

Advocacy and Advisory Groups

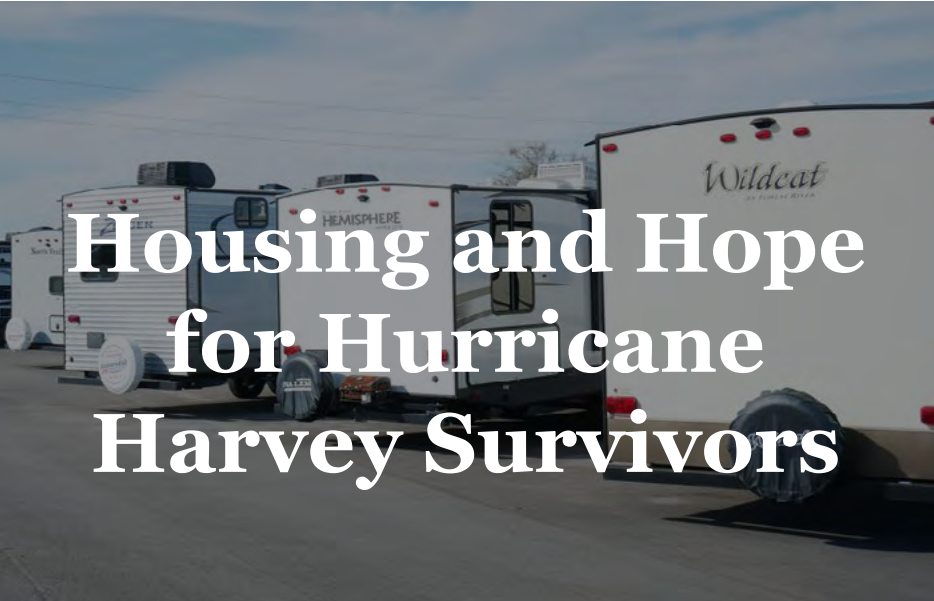
The Sustainability External Advisory Council (SEAC) has represented a wide variety of external stakeholders since its initial meeting in 1992. The SEAC provides for open and structured dialogue between Dow’s senior leaders and independent external thought leaders on issues of critical importance to society and the Company. The SEAC challenges the way the Company thinks, helping to frame important challenges and opportunities in a creative, solutions-oriented way. The selection of members for the SEAC focuses on the potential to challenge conventional thinking and press the case for adopting proactive and impactful positions on important issues.

Topics discussed with the SEAC in 2018 include:

- Sustainability strategy for the new Dow and impact of future trends
- Valuing Nature goal, seeking benchmarks for valuing ecosystem services
- Inclusion and Diversity strategy
- Recommendations for sustainability topics to address that are not covered with 2025 Sustainability Goals
- Plastics business sustainability strategy
- External engagement strategy
- Plastics circular economy and recycling platforms

Communities GRI 413-1, GRI 413-2

Community Advisory Panels (CAPs) – At Dow we believe our decision-making processes are improved when we involve the community. Dow has been an industry leader in establishing and using CAPs in the communities where we have operations. With sites in 35 countries, Dow has a daily presence in small towns and cities around the world as a neighbor, community leader, employer and manufacturer. Understanding the needs of the communities where Dow has locations, and responding in a constructive and appropriate way, is part of our role as a community member and one to which we are deeply committed. Dow’s CAPs represent a broad cross-section of local interests, including healthcare, education, civic engagement, law enforcement and local business. The CAPs operate in more than 38 of our global manufacturing communities and help us engage in ongoing and open communication regarding Dow’s operations, safety programs, environmental conditions, community interaction, and other aspects of the Company and plant.



Housing and Hope for Hurricane Harvey Survivors

When natural disasters strike, they can leave destruction behind within minutes. But it can take communities an average of five years to fully recover. Recognizing the need for long-term support in many Texas communities impacted by Hurricane Harvey, Dow saw a unique opportunity in 2018 to make a difference for residents who still were without permanent homes. Immediately after the hurricane hit in 2017, Dow purchased trailers for displaced employees to live in while their homes were being rebuilt. As the waters receded and their homes were repaired, these employees began to move back home and returned the trailers to the Company. Working with Good360 and the Rebuild Texas Fund, Dow donated 57 trailers to communities hit by the hurricane and in need of housing. The donation, valued at more than \$800,000, was among the most complex in the Company’s history, as it required funds to refurbish the trailers, locating recipients in need of housing and parks in which the trailers could be installed. But for the communities and families that received the trailers, it helped them recover and rebuild. As one hurricane survivor put it, the trailer “changes everything” for their family, enabling them to save money to rebuild a permanent home.



Feedback from CAPs enables Dow to be responsive in addressing a community’s quality of life needs and help identify where the Company can have the greatest impact. Dow continually refreshes its CAPs to maximize value for both Dow and the community. To find new ways to expand their reach, CAP members also engage other community residents by inviting them to Dow-hosted events. This results in greater feedback by residents and more awareness-building about Dow within the community.

Dow also measures its impact as a corporate citizen and identifies concerns through periodic community assessment surveys at select sites. These surveys generate feedback related to quality-of-life issues, identify Dow’s “rightful role” in a community and also provide direct recommendations on opportunities where Dow can have a positive impact. We address these and many more issues through our local site Community Success Plans.

Customers

In 2018, Dow’s commercial leadership recognized that customer-interfacing roles are in position to understand the needs of our customers relating to their increasing efforts to tackle sustainability challenges and Dow’s capabilities to impact these efforts. The corporate sustainability team partnered with Dow’s commercial organization to launch a series of training sessions across the global customer interface organizations (sales, marketing, TS&D, product stewardship, etc.) to help Dow people proactively identify opportunities and prepare to integrate sustainability into the value proposition of Dow-customer relationships in deeper and more valuable ways.

Employees

Attracting and retaining world-class talent is the key to maintaining Dow’s competitive advantage. We constantly strive to maintain a culture where employees are valued, respected and encouraged to grow in their careers. In order to continue accelerating Dow’s transformation, we must empower one another to act as agents for positive change within our Company. This is why we are committed to regularly conducting global survey programs among our employees and tracking and planning actions against measures of the Company culture.

In 2018, Dow showed progress in numerous categories, including showing interest in the well-being of its employees, providing a supportive work environment that encourages healthy behaviors, and showing a clear link between employee work and company objectives. As for opportunities, Dow intends to put a renewed focus on leadership effectiveness by refining training and tools for development. Finally, Dow has committed to gathering regular employee feedback throughout the year to respond in real time, not just annually, and will deploy new listening strategies such as pulse surveys in 2020.

Dow’s global survey program has existed since 1995 and utilizes an annual survey called the Global Employee Opinion and Action Survey (GEOAS). The GEOAS is designed to measure employee satisfaction, commitment and engagement via questions about the job, development, leadership, work environment, communications and more. The GEOAS survey is implemented by a third-party vendor. GEOAS results are key inputs into the corporate and

HR strategy and provide the primary metric of performance results.

The survey is administered globally to all employees of Dow, with minimal parameters around eligibility. Specifically, any employee who is full-time, not on a leave of absence, and has been with Dow for at least three months is eligible. This includes bargained-for employees. Survey confidentiality is also protected, and the governance behind confidentiality is reviewed each year with legal counsel and European Works Council representation.

Engaged, energized employees are at the heart of Dow’s success. In 2018 GEOAS, questions were added to align our assessment with Dow’s strategy, and it was the first year colleagues joining new Dow from heritage DuPont participated. Overall participation increased, with a 77 percent global response rate, with 27,970 employees responding. The valuable feedback on employee engagement and satisfaction gives leaders crucial insight into what is working, helps identify where we can improve and will help shape the culture for new Dow. In 2018, employees reported an increase in trusting the senior management team by 5 percent, showing that Dow is continuing on a path to success for everyone.

In addition to the critical metric of employee engagement, the 2018 GEOAS was again paired with a Leadership Effectiveness Survey (LES). The LES allowed employees to provide confidential feedback on their supervisors and the areas where they can develop to better lead and engage. Employees are encouraged to think about recent interactions with their leaders, call attention to their strengths, and provide candid,

constructive feedback on specific opportunities for development. The Leadership Development Guide and Leadership Effectiveness Feedback Report provide leaders with insight into where they are in their journey toward superior leadership. Together, they offer ideas on the areas to focus on as they work to build relationships and enhance their interactions with individuals on their team to motivate, engage and lead them to success. Dow connects leaders with specific development resources as part of the LES feedback process. In 2018, scores on the survey were also realigned to simplify the reporting model; items now roll up to dimensions that are one-for-one with Company values and leadership expectations.

Employee Resource Groups

Ten Employee Resource Groups (ERGs) – each with a senior executive sponsor – bring together people with a common interest to share experiences, find mentors, seek professional development, and gain access to senior leadership.

- Asian Diversity Network
- Disability Employee Network
- GLAD
- Global African Affinity Network
- Hispanic Latin Network
- Middle East/North Africa Intercultural Network
- PRIME
- RISE
- Women’s Innovation Network
- Veterans’ Network



RISE and PRIME

What if employees saw their differences as an advantage? With two new ERGs, participants are finding that employees who are new to the Company and employees over 50 are creating an opportunity for those of different generations to share their knowledge with each other. For over 25 years, Employee Resource Groups (ERGs) have helped drive culture change and advance business results. In 2018, we expanded the number of ERGs from 8 to 10 with the additions of RISE and PRIME. Developed to promote meaningful employee relationships, RISE acknowledges the contributions of new employees who have been with the Company for eight years or less, while PRIME values employees over age 50. Participants of RISE represent the evolution of Dow in a big way: In the past five years, more than half of our 22,000 new employees were younger than age 32. Together, the two groups share their respective knowledge of technology and career development skills in a way that supports culture change and mutual improvement.



The ERGs serve as an internal resource to help cultivate a multicultural competency within Dow, partner with businesses/functions to develop people and influence culture; engage employees for impact on sustainability goals; and work collaboratively to maximize local and national inclusion and diversity partnerships.

They also serve as critical links to career development resources and opportunities, as well as networking connections through an inclusive community highlighted by respect, collaboration, and open and honest communication. All employees are eligible to join any of the networks at any time in their career.

**Job Candidates**

Candidates are increasingly behaving like consumers when choosing an employer. As a result, companies are adjusting how they source and engage with talent through the use of digital hiring strategies. Through collaboration between Dow Human Resources and Public Affairs, we have made significant progress toward meeting the Company’s hiring needs through the innovative use of multi-channel digital and social media.

Enabling Dow’s success begins with having a diverse workforce that represents the demographics of the markets we play in. This aligns with our ambition to meet current and future business needs while fueling Dow’s growth. Digital hiring offers Dow the ability to target and attract qualified talent to fill strategic roles anywhere around the globe, faster and at lower cost than via traditional recruiting methods. To ensure we are targeting top talent interested in Dow, we apply a combination of recruiting methods and channels to reach these diverse candidates.

Dow has participated in external benchmarking studies that rank the digital recruiting performance of premier companies. The benchmarking studies evaluate Dow’s overall online talent communications across digital and social channels, our use of social media to connect with prospective employees (e.g., LinkedIn, Facebook, Twitter, YouTube, Glassdoor), our desktop and mobile-enabled careers website, our Talent Community and our online application process. Dow has been ranked more favorably than other premier companies including our competitors for talent, and also ranked higher than leading global technology companies.



**Crediting  
the Wind  
for Reduced  
Carbon**

How are we helping to make products greener and more sustainable? It is a frequent question from our customers, and Dow is answering it with renewable energy. Brands are searching for solutions that help them meet their carbon footprint reduction commitments and differentiate them from competitors. Renewable Energy Certificates (RECs) certify that a component of a product was made using renewable energy – and Dow is earning RECs by using renewable energy from Texas wind farms to produce polyethylene. Wind energy enables Dow to convert ethane to polyethylene in our plants, which is tracked and reported to the Electric Reliability Council of Texas. By using wind power to manufacture polyethylene, carbon emissions are greatly reduced. When customers choose to purchase polyethylene produced using renewable energy, they are able to report reduced Scope 3 greenhouse gas emissions and promote the use of renewable-energy-made plastic directly on their packaging to differentiate their products. It’s a win for customers and for the environment.



**Academia**

In alignment with Dow’s 2015 Sustainability Goals, the Sustainability Innovation Student Challenge Award (SISCA) program was launched in 2009. To promote forward thinking in social and environmental responsibility, SISCA acknowledges the energy, commitment and enthusiasm of the students and their university professors, sponsors and facilitators who support their sustainability innovations and efforts in continued excellence.

**NGOs**

NGOs raise awareness in the public and advocate for many issues that impact Dow and its reputation. In some cases, the Company engages NGOs by providing public information about historical issues and challenges such as Agent Orange, asbestos, Bhopal and dioxin. Dow engages select NGOs directly through collaboration. Examples of NGO collaborations can be found on pages 42-43, page 48 and throughout the report.

**Regulators**

The actions and proposed actions of regulators can impact Dow’s operations and reputation. Regulators were engaged on several topics in 2018, including:

- Cyclic siloxanes
- Microplastics
- Chemical safety



Sustainable Chemistry

Dow’s ambition includes being the most sustainable materials science company in the world. As one of the metrics for our Delivering Breakthrough Innovations Sustainability Goal, Dow has developed the Sustainable Chemistry Index (SCI). The SCI is a series of questions to be answered annually by each of our business units. The 2025 SCI questions are grouped into four themes: risk, innovation, business rewards and strategy, and value chain. Some questions require quantitative or semi-quantitative answers, and some are opportunities to provide stories in text or examples. These stories can be drawn from – or be the starting point for – information used to promote Dow products and actions or to create external reports.

Product Focus	Business Focus
Risk	Business Strategy & Recognition
Addressing World Challenges via Products & Collaborations	Value Chain Sustainability

The SCI process each year includes identification of business focal points and subject matter experts who respond to the survey. Scoring is done by the corporate team, which reviews the results with each business and aggregates the results into a corporate measure of sustainable chemistry progress. Each business is provided feedback in the form of scorecards, benchmarks, and lists of strengths, gaps and opportunities. The results provide a way to analyze the Company’s portfolio that incorporates sustainability and economic performance together. The SCI process has been documented in an external report and shared at several conferences.<sup>3</sup> Below are some of the data insights we gained in the 2017 cycle (reviewing 2017 performance).

52% of sales

are from products that

address world challenges



65% of R&D projects

address world challenges




Risk Characterization Process

All products (100 percent) are assessed in an appropriate manner – depending upon EH&S profile, application and exposure potential – for improvement opportunities as part of Dow’s EH&S management approach at each stage of the product life cycle. The human and environmental risks of all our products are characterized using Dow’s risk characterization process/tool. The tool requires the assessment of hazard and exposure information to identify risk tier. The risk tier will then determine the depth of the Product Stewardship program, including EH&S information, Business Risk Review requirements and distributor/ customer support. Dow businesses utilize the Business Risk Review process to assess and minimize possible adverse impact on people, property and the environment as a result of Dow’s business activity including minimizing EH&S impacts associated with new and existing operations, products, applications and services throughout the product’s life cycle.

3

GOOD HEALTH AND WELL-BEING



UN SDG ALIGNMENT

Dow has committed to leadership in material safety through the targets in the 2025 Sustainability Goal Safe Materials for a Sustainable Planet. This work supports sub-goal 3.9: “By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.”

Businesses are required to conduct risk reviews when material new information is received, including material changes in product uses, regulations or raw materials, or when triggered, in certain cases, by the passage of time. Improvement opportunities have been identified to clarify and strengthen these triggers. How frequently risk reviews should be repeated is determined by the risk tier for the product/application identified with Dow’s product risk characterization tool. In the process, and through use of supporting processes and tools, health and safety impacts are assessed with respect to new product development, manufacture of product, transportation and distribution, use of product at customer facilities, and recycle, reuse or disposal. Risk mitigation measures are identified and implemented as a direct result of the Business Risk Review work process. Various product stewardship efforts such as distributor and customer qualifications and industry advocacy work are just a couple examples of involvement in the storage, distribution, supply and use steps of product life.

With increased interest of the broader value chain on chemical identity and use, we are actively listening and engaging with stakeholders to advance the development and adoption of sustainable materials and practices as part of our Safe Materials for a Sustainable Planet Goal. We are working to understand and positively respond to growing pressure against chemicals of concern in the marketplace as part of our commitment to delivering the sustainable materials

of tomorrow and enabling a circular economy. By actively engaging with external stakeholders to lead a candid conversation on product safety, we are proactively supporting safe material handling practices and the development of sound regulatory paradigms in developing regions. We also are committed to responding to the increasing customer and market requests for product transparency as part of our open and transparent chemistry initiative, so we can maintain credibility and build trust on product safety. Overall, these efforts are part of our commitment to ensure the safe handling, use and management of our products and work with stakeholders throughout the value chain toward our common goal of ensuring product safety and sustainability. To learn more about our policy on chemical management and our product stewardship program, visit the Market & Solutions section on [www.dow.com](http://www.dow.com).

**GRI 102-11** We support a precautionary approach as set out in Principle 15 of the Rio Declaration on Environment and Development: “In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.”

The Rio Declaration was amended at the Johannesburg Summit to include health impacts, in addition to environmental impacts. We believe that approaches should be risk-based and cost-effective. Additionally, the selected chemical management approach should be:

- Proportional to the objective being pursued
- Provisional
- The least burdensome option that provides adequate protection from the risk

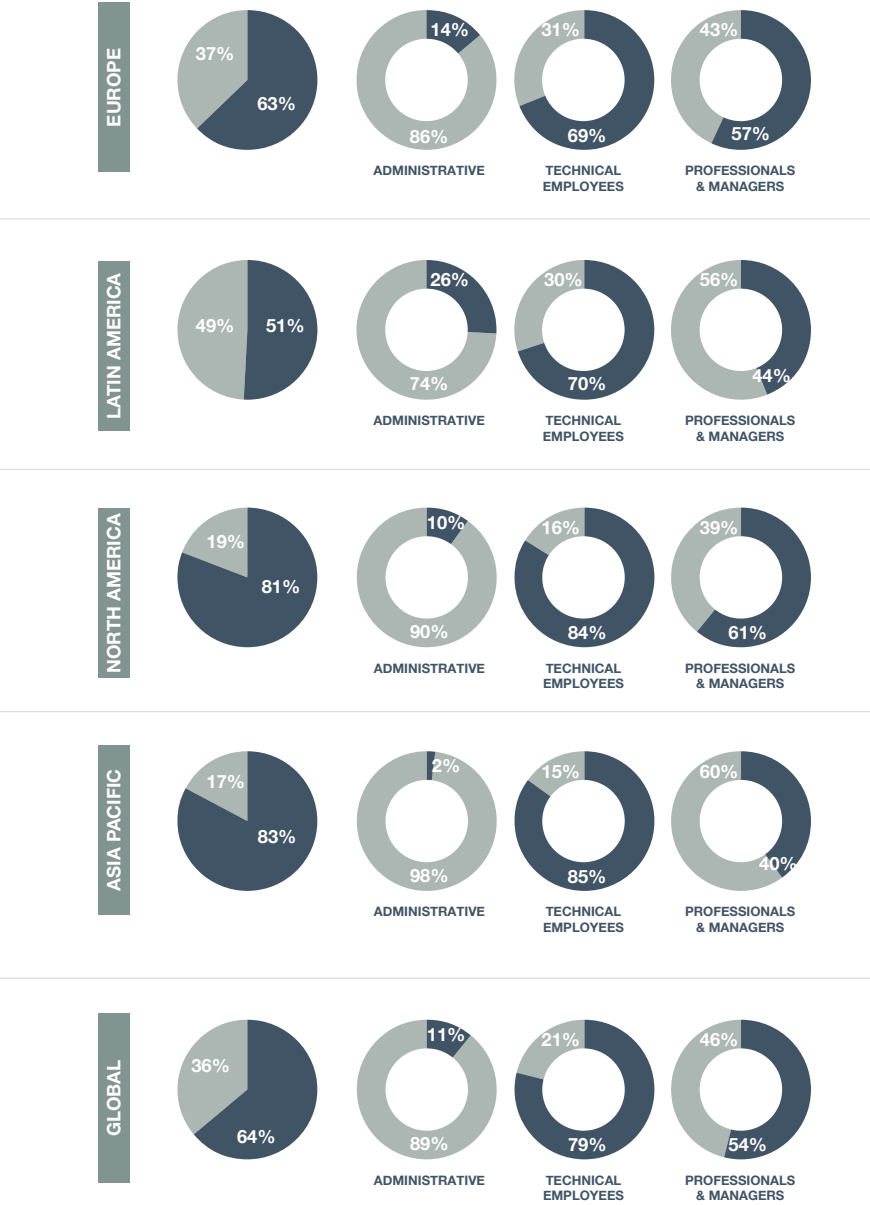
Below is a partial list of associations in which Dow is engaged and provides leadership support. GRI 102-13

Alliance for PE Pipe	Environmental Defense Fund	Plastics Pipe Institute
Alliance for Competitive Taxation	Flexible Packaging Association	Texas Association of Manufacturers
American Institute for Packaging and the Environment (AMERIPEN)	Global Silicones Council (GSC)	Texas Chemical Council
American Center for Life Cycle Assessment (ACLCA)	Greater Houston Partnership	Texas Civil Justice League
American Chemistry Council (ACC)	Greater New Orleans, Inc	Texas Taxpayers & Research Association
American Coatings Association	International Council on Chemical Associations (ICCA)	The Michigan Chemistry Council
American Fuel & Petrochemical Manufacturers	Louisiana Association of Business & Industry	The Nature Conservancy
American Petroleum Institute	Louisiana Chemical Association	US Chamber of Commerce
Business Roundtable	Michigan Chamber of Commerce	US Council for International Business
Center for Chemical Process Safety (CCPS)	Michigan Manufacturers Association	United States - India Strategic Partnership Forum
European Chemistry Industry Council (CEFIC)	National Association of Manufacturers	World Business Council for Sustainable Development (WBCSD)
Corporate Eco Forum	Plastics Europe	World Economic Forum (WEF)

<sup>3</sup> Helling, Richard, Shawn Hunter, Erica Ocampo, Han Zhang “Use of the Dow Sustainable Chemistry Index to grow life cycle thinking and business engagement” ACS Sustainable Chemistry & Engineering, (2017) DOI 10.1021/acssuschemeng.7b03704



New Employee Hires and Employee Turnover GRI 401-1  
NEW EMPLOYEE HIRES – Gender by Job Category



The workforce data is gathered through a centralized database containing all employee information. The employee data is updated by Human Resources and managers when employee information changes occur. The data represents the global employee population as of December 31, 2018 and includes all permanent, full-time and part-time employees. Temporary employees, contractors, and manual additions are excluded unless otherwise stated.

● Male  
● Female

If science provides us with the ability to create, use and evolve technology to build a better world, then we need diverse voices and backgrounds to help us arrive at the best solutions possible. We also need committed employees who are willing to apply their passion and expertise to advance the well-being of people and the planet. Through their work and volunteer activities, our employees are helping us lead the transition to a more sustainable planet and build stronger, more resilient communities at the intersection of sustainability, innovation and citizenship.

Employment

The Future Is ... Inclusive and Better for Everyone

At Dow, we believe science and humanity can change the world. While engaging with both internal and external stakeholders, Dow keeps sustainability at the forefront of everything we do. Internal work processes, how we treat people, even the products we create, inspire our people to deliver sustainable solutions, business growth and optimal customer experience. Through Dow’s 2025 Sustainability Goals, we are committed to protecting our planet by utilizing our diverse and talented employees’ passion, creativity and expertise to accomplish our Engaging for Impact Sustainability Goal to positively impact more than 1 billion lives. Our employees are able to align passion to purpose through a portfolio of volunteer opportunities, ranging from our STEM Ambassador Program and Habitat for Humanity builds to Leadership in Action, Global Health Corporate Champions and nonprofit board service.

Our world is changing at a pace never seen before. To continue to compete and lead, we need to think and act in new ways. A successful future for Dow and our employees will be built on learning. With a strong continuous improvement and learning culture, and in alignment with the Company’s focus on technology and innovation, digital platforms are continuing to be incorporated and expanded – beginning with a stronger digital hiring presence.

Throughout an employee’s career, the Company supports people in their personal development through a mix of online and digital learning platforms, on-the-job training and a series of leadership development academies. Employees are encouraged to invest in themselves, and the technologies

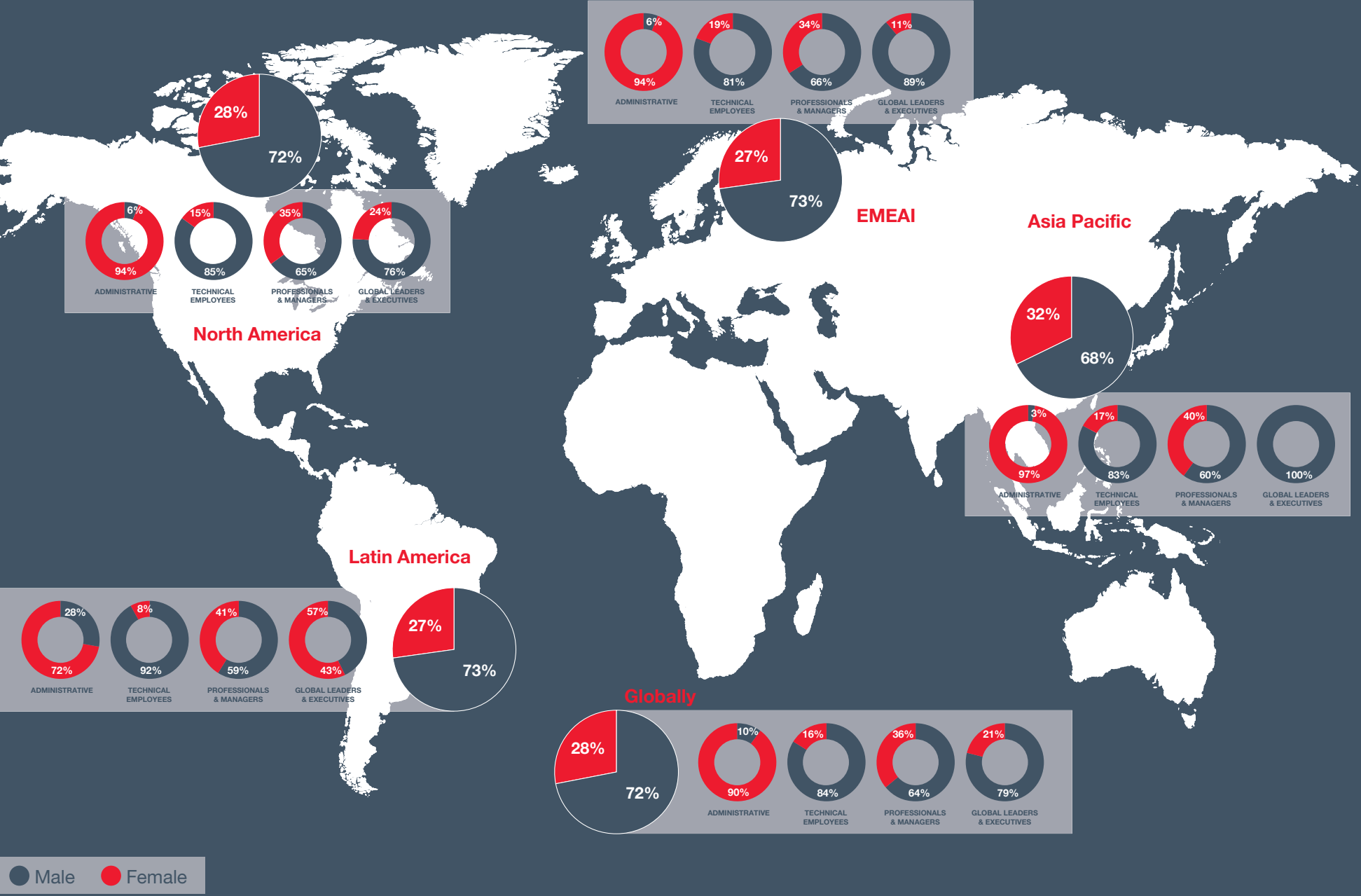
How does embracing inclusion

help promote the success of our people and planet?

HOW WE DO IT



Workforce Representation by Job Family



we deliver enable employees to access resources in real time through mobile applications. Every Dow story starts with our people. Dow drives a performance culture through continuous feedback, feedforward, and frequent and diverse development opportunities. We measure and benchmark culture and employee engagement on an annual basis, and take action on corporate priority areas for improvement. Dow’s efforts and commitment to creating a workplace that fosters innovation, collaboration, inclusion, safety and well-being for all Dow employees is reflected through 2018’s Top Employer accolades in 17 countries.

Employee statistics are consistent with the total number of employees reported in the Dow 10-K issued February 2019. Investors may refer to the subsequent Form 10 issued March 12, 2019, which includes pro forma data on financials and employment.

Involuntary Attrition by Region **GRI 401-1**

Involuntary Attrition	EU	LA	NA	AP	Global
Total	4.6%	8.5%	5.5%	3.7%	5.2%

Involuntary attrition includes the impact of divestitures

Involuntary Attrition by Gender

Female	5.7%
Male	5.1%
Total	5.3%

Involuntary attrition includes the impact of divestitures

Voluntary Attrition by Age Group

Under 30	6.6%
30-50	3.5%
Above 50	5.4%

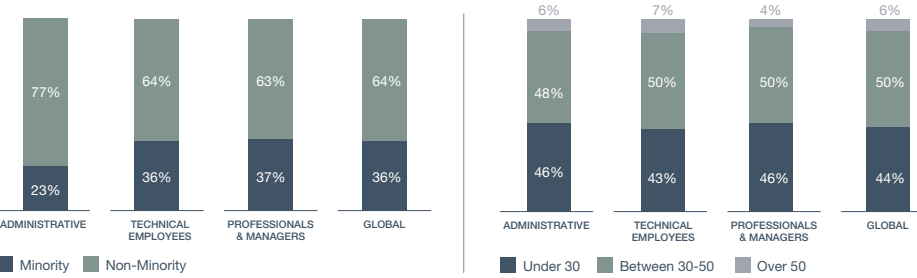
Voluntary Attrition

Employee Turnover	EU	LA	NA	AP	Global
Female	4.8%	5.0%	4.1%	6.5%	4.8%
Male	4.1%	4.4%	4.8%	4.9%	4.6%
Total	4.3%	4.5%	4.6%	5.4%	4.6%

Voluntary Attrition

0-1 Years of Service	6.1%	4.5%	6.0%	12.0%	6.9%
2-3	7.4%	4.4%	6.7%	8.6%	7.0%
4-5	6.1%	5.3%	5.7%	8.1%	6.1%
6-10	4.4%	3.6%	4.3%	3.9%	4.2%
11-15	1.9%	0.8%	2.4%	2.7%	2.2%
16+	3.6%	6.4%	4.2%	3.4%	4.1%

New Hire Diversity Indicators **GRI 401-1**



Benefits provided to full-time employees that are not provided to temporary or part-time employees, by major operations **GRI 401-2**

Regular full-time and less-than-full-time employees are provided a wide variety of benefits while only temporary employees are not eligible to receive these benefits. Dow’s benefit plans are designed to build on the social security benefits provided in each country and, as a result, vary by country. In all significant Dow locations, we offer the following benefits to employees:

- Pension plans, either defined benefit or defined contribution plans
- Medical plans, often including prescription drug coverage and dental
- Life insurance
- Disability protection
- Accident insurance
- Paid vacation, holiday and leave programs
- Business travel accident

Return from Leave Rates

Parental Leave **GRI 401-3**

Dow’s Global Parental Leave Policy is intended to provide greater flexibility and work-life balance for mothers and fathers. Birthing parents have a minimum 12 weeks of paid leave and the non-birthing parent has two weeks of paid leave, which can be taken during the 12 months following the birth of a child.

Return from Leave Rates	Number of Employees	Female	Male
Total number of employees who were entitled to parental leave	53,672	28.0%	72.0%
Total number of employees who took parental leave	123	75.0%	25.0%
Total number of employees who returned to work in the reporting period after parental leave ended	79	66.0%	34.0%
Total number of employees who returned to work after parental leave ended that were still employed 12 months after their return to work	19	89.5%	10.5%
Return to work and retention rates of employees who took parental leave	90	67.0%	33.0%



**Collective bargaining agreements** **GRI 102-41**

**Percentage of total employees covered by collective bargaining agreements**

**GRI 102-41**

Approximately 28 percent of Dow’s workforce was covered by either formal collective bargaining agreements or works councils in 2018.

**Investing in Our Workforce**

Through the Engaging for Impact 2025 Goal, Dow will continue to provide value internally in the form of employee engagement, retention and skill development. Engaging employees for impact will in turn improve the quality of life for millions of people each year, positively impact Dow’s reputation and have a lasting effect for generations to come.

In 2018, our leaders focused on using our Accelerate Great Recognition Tool to drive employee engagement and say “thank-you” to our employees for a job well done. Accelerate Great is the formal recognition tool for appreciating great work at Dow. When recognizing globally there are numerous steps that can be used to validate performance:

- **eThanks** – used to recognize everyday actions, impact, and events
- **Spotlight, Bronze, Silver, Gold and Platinum Awards** – point-based awards of increasing value to better align recognition with impact (leader approval required)
- **Diamond Keepsake Awards** – Cash awards for higher-level impact, contribution and results, paid in the amount of 20 percent or 30 percent of annualized monthly base salary

To promote our digitally enhanced employee experience, each associate is able to go mobile

with the Accelerate Great app to promote timeliness of recognition.

**Learning and Development** **GRI 404-1**

Diamond Learning, the Company’s global Learning Management System, offers a simple, engaging user experience and integrates modern learning technology solutions to digitalize and enhance employee learning capabilities. Diamond Learning supports Dow’s strategy of providing learning that is simple, continuous and value-added. It emphasizes our desire to recognize and appreciate employee growth.

Our employees select and manage curriculum that aligns with their core role responsibilities and personal development interests. Dow can also ensure compliance on any necessary safety training. Diamond Learning has improved our ability to make learning more relevant and engaging as we continue to leverage more of the system’s capabilities. Over 40,000 courses are currently available, from internal content to Harvard Business Leadership courses, keeping our learning experience diverse and engaging. Our system and content may be a catalyst to employee development, but our employees are at the core of our learning culture.

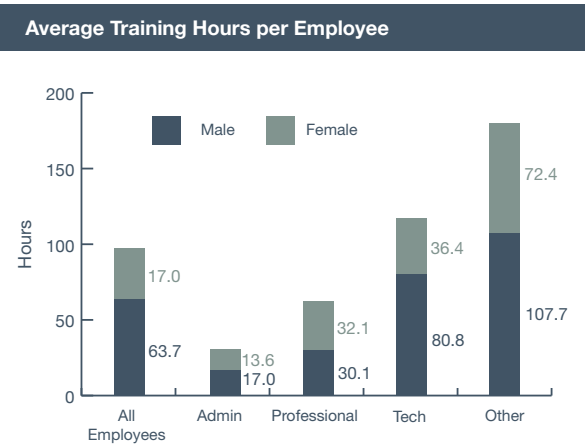
According to the GEOAS (Global Employee Opinion & Action Survey) completed in 2018, 72 percent of Dow employees felt encouraged to continuously learn and develop in their role. On average, there were 54.3 hours of training logged per employee in 2018. Leaders completed 10,524 hours of leadership-specific training hours amongst 13 courses.

The difference in the training hour average among males and females in the Tech and Other categories is largely influenced by the distribution of gender by function and role. Females in the

Tech and Other categories are the majority in our support services functions and roles, while males in these categories are the majority in our production-aligned functions and roles. The employees working in the production facilities have a higher number of required training hours to ensure safe and effective operation of our plants.

**Average Training Hours per Employee**

**GRI 404-1**



**Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings**

**GRI 404-2**

In 2018, Dow employees had unlimited access to materials that supported their personal and professional growth and development. Dow cares about employee engagement and supports it through My HR Connection, an online people resource. My HR Connection allows all employees to use development resources, online internal job postings, compensation and benefit information, health and wellness programs, and

career stage (early or late) planning. Employees take advantage of these offerings to develop their careers, enhance their employee experience and plan for career changes. In addition, Dow supports lifelong learning through specific skill building provided through functions, externally licensed development tools and an internal talent review process focused on differentiated development. In 2018, employees separated from the Company were offered support services including career coaching, resume optimization, networking and interview preparation at no cost. Examples of available development resources include:

- Employee worksheets exploring personal and career values, preferences and orientations
- Forms and guidelines to prepare for employee career development discussions
- Global Educational Assistance that supports employees in pursuing external training/ educational opportunities for career development
- Access to HR and retiree service call centers for personalized answers to HR questions

- Benefits counseling for employee retirement planning purposes
- Financial planning seminars for all employees
- Employee Resource Groups that support a variety of development opportunities
- A learning management system, Diamond Learning, for tailored learning curricula aligning to role responsibilities and personal development
- Total health, nutrition and wellness centers and associated programs and counseling
- Career transition assistance benefits including outplacement counseling services

**Percentage of employees receiving regular performance and career development reviews by gender** **GRI 404-3**

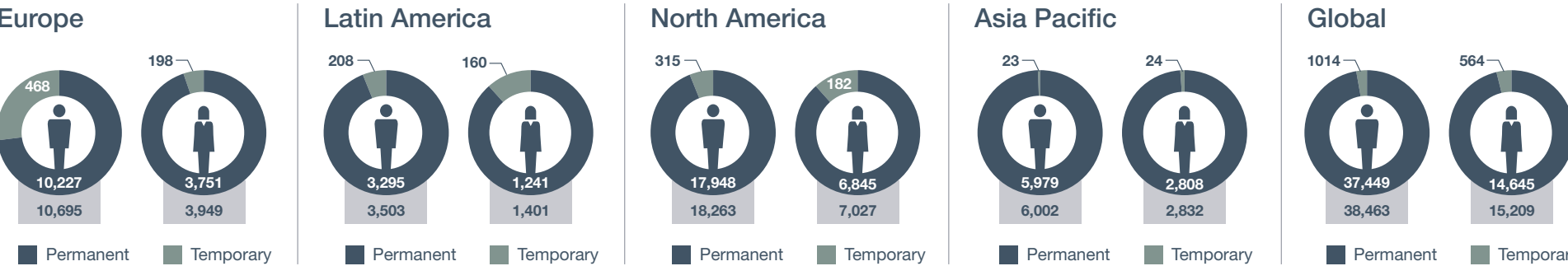
Performance Management (PM) strives to maximize the connection between employee development and organizational performance. Both leaders and employees play a key role in ensuring the effectiveness of PM by establishing SIMple (specific, important, measurable) goals,

encouraging continuous development feedback and dialogue, and reviewing progress on an ongoing basis throughout the year. PM aligns with Dow’s overall employee development strategy by building skills that promote change, align behaviors with corporate strategies and ethical standards, and provide employees the opportunities to improve their performance and effectiveness.

Our PM cycle provides a structure to facilitate the alignment of expectations and goals, the integration of ongoing coaching and feedback, and the summary of contributions – including both “What” (core job, goals, impact) and “How” (behaviors/competencies).

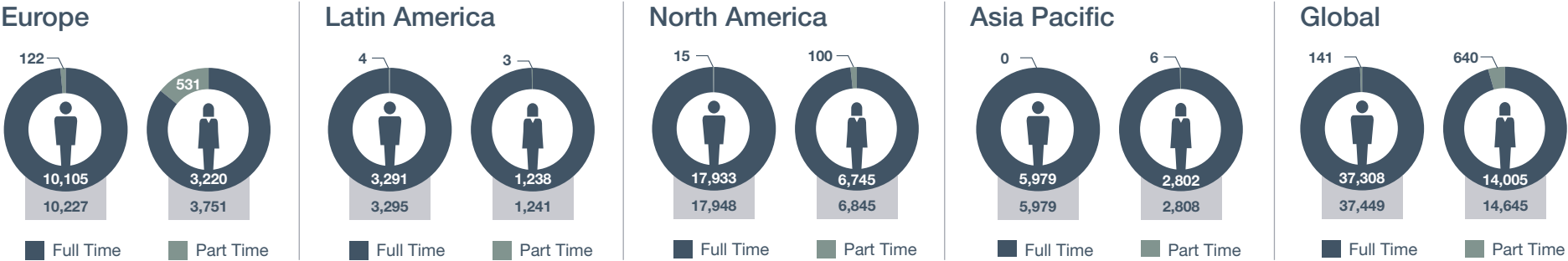
Setting clear, meaningful and challenging performance expectations along with providing regular coaching and feedback are critical leadership skills. Our leaders are encouraged to partner with their employees to identify their strengths as well as opportunities for development. This ongoing collaboration is one way we can engage our employees and drive Dow’s success.

**Workforce Representation – Temporary and Permanent by Geography** **GRI 102-8**





Workforce Representation – Full Time and Part Time by Geography **GRI 102-8**



The PM cycle concludes with an annual review. This discussion features recognition for contributions and feedback on areas for development for the future. In preparation, leaders gather multi-rater feedback throughout the year to enhance the quality of the discussion and ensure multiple inputs to performance ratings.

In 2018, 96.3 percent of employees were eligible to receive an Annual Performance Review and have a performance rating in the system. There is no difference in eligibility by gender. There were 3.7 percent of employees who were ineligible including students, interns, co-ops, those who were part of divestitures and specific joint ventures, and other Dow employees based on local contractual agreements.

All employees are encouraged to have continuous development discussions and develop a plan for continued growth. This information is helpful for global Talent Management to understand and improve the effectiveness of our Performance Culture. **GRI 404-3**

**Percentage of Employees Receiving Regular Performance and Career Development Reviews**

	Male	Female
Administrative	100%	99.3%
Professionals & Managers	99.9%	100%
Global Leaders & Executives	100%	100%
Technical	84.8%	86.3%
Total	96.2%	96.4%

**Compensation Equity **GRI 405-2****

Global pay equity studies have been conducted at Dow over the last 20 years to assess fair treatment and ensure our pay practices are being implemented appropriately. The most recent analysis was conducted for 2018, following our annual global pay planning cycle. The impact of gender on pay decisions is examined globally, and the impact of ethnicity is examined in the United States. Dow’s three components of compensation are reviewed (base pay,

annual performance award and long-term incentives). The study examines impact on pay differences that cannot be explained by legitimate factors (e.g., performance ratings, job level, education, years of service, time since promotion, age, and/or geography).

The 2018 pay equity study found no meaningful difference in base pay, performance award or long-term incentives between genders or between U.S. minorities and non-minorities. Pay differences were attributable to the legitimate factors listed above and were not related to gender or ethnicity. These results demonstrate that pay equity exists across Dow following the 2018 increases and that global pay-planning guidelines are being applied appropriately.

2018 Pay Equity Summary Results <sup>1</sup>	Base Pay <sup>2</sup>	Performance Award <sup>3</sup>	Long-Term Incentives <sup>4</sup>
Global Female Pay as Percent of Male Pay	100.5%	100.0%	100.3%
U.S. Minority Pay as Percent of Non-Minority Pay	100.5%	99.9%	99.6%

<sup>1</sup> The reported ratios are based on the standardized mean differences when controlling for legitimate business reasons for the differences (e.g., geography, job level) in accordance with the applicable laws.  
<sup>2</sup> Base pay is calculated based on average position in the pay range.  
<sup>3</sup> Performance award is calculated based on the actual value granted.  
<sup>4</sup> Long-Term Incentives (LTI) analysis includes only those eligible, and excludes other roles. LTI is calculated based on the actual value granted.

As a continued commitment to pay equity, Dow signed the White House Equal Pay Pledge in June 2016. Beginning in 2019, Dow moved to conducting annual pay equity analyses across the full population, and is expanding the scope to include promotions, hiring and other activities.

**UN SDG ALIGNMENT**

Dow has provided opportunities for leadership at all levels of decision-making in the corporation for women, contributing to SDG sub-goal 5.5.





“Not only did the direct tasks of my job revolve around sustainability, but I was working for an organization that was asking the toughest questions. I can only hope the next step in my career has a similar platform to make an impact.

**Matt Pundmann, Dow business sustainability intern**

## Investing in Sustainability Leaders of the Future

To address global challenges, the world needs leaders who understand the value of sustainability and collaborative, blueprint-style thinking to drive change. At Dow, we are investing in employees and students to help develop the sustainability leaders of the future.

### Sustainability Academy

Since its 2017 launch, the Sustainability Academy has provided 116 Dow employees in three cohorts with the hands-on experience and tools needed to bring sustainability business insights into their jobs.

A partnership with the University of Michigan’s Erb Institute, the program has been popular with employees and yielded long-lasting business results. Employee participants are selected through a competitive nomination process to participate in a six-month experience that includes:

- An immersive four days on the University of Michigan’s campus learning the fundamentals of sustainability from professors in the field
- Completion of a team project aligned with a Dow 2025 Sustainability Goal and supported by an expert mentor
- An opportunity to present project results and network with Dow leaders at a forum to close the cohort

The program is currently under consideration for expansion to other geographies, so more Dow employees can benefit from this unique experience.

### Dow Sustainability Fellows Program at the University of Michigan

The Dow Sustainability Fellows Program is supported by funding from The Dow Chemical Company Foundation and engagement of Dow professionals. During the six years of this collaboration with the University of Michigan, 315 graduate students (master’s and doctoral) and postdoctoral professionals have completed the program. A key driver of the Dow Sustainability Fellows Program is to prepare future leaders to make a difference in organizations worldwide.

Master’s students comprise the core of program, and approximately 265 master’s/professional students have been named Dow Sustainability

Fellows. Master’s fellows form interdisciplinary teams of 4-6 fellows each and work directly with a client or community. Each year, Dow Fellow teams analyze options and develop actionable recommendations on particular sustainability challenges. Student-led teams have addressed significant projects in Michigan (Detroit, Benton Harbor), regionally (Great Lakes) or globally (Brazil, Africa, India). Dow Company professionals serve as consultants to project teams, provide resources and expertise, and have led skill sessions focusing on project management. University of Michigan faculty serve as academic advisors to teams, overseeing research methods.

**Program Analysis:** Program evaluation efforts initiated in 2018 focused primarily on an analysis of 200 master’s fellows alumni and the clients with whom fellows previously engaged in team-based projects. The Dow Fellows Program experience met or exceeded expectations for 86 percent of alumni. When alumni were asked about the program’s impact on their career, 98 percent of respondents noted that it had some effect, with 20 percent sharing that it significantly impacted their career path. Several Dow Fellows specifically noted that meeting other students focused on sustainability was inspiring and helped shape their career goals. For others, the program was transformational for their careers, and several mentioned that their current job opportunities

See the Dow Fellows Program website:  
<http://sustainability.umich.edu/dow>

Read the Dow Global Impacts Series (sustainability project summaries):  
<http://sustainability.umich.edu/dow/media/global-impact-series>

happened as a result of their team projects. Others noted that learning about sustainability in practice, and in the business world, in particular, helped prepare them for their career.

### Business Sustainability Internships

In the summer of 2018, six MBA students worked within a Dow business to uncover and accelerate opportunities to build brand or product value through sustainability. Interns had a senior sustainability expert personally mentor them and attended various events to learn from Dow’s leaders on a variety of business sustainability topics. In addition, a summer post-graduate Sustainability Technology intern conducted a project designed to improve the Company’s understanding of the use and fate of Dow materials, especially as it relates to the 2025 Sustainability Goal of Delivering Breakthrough Innovation.

Sustainability also is woven into career development within Dow:

- **2025 Sustainability Goal leadership and implementation:** Approximately 50 Dow



leaders are engaged in a high-commitment network commissioned with implementing Dow’s 2025 Sustainability Goals. For each goal, Dow has designated executive sponsors, implementation leaders and project leaders. In addition, in every business, function and geography, there are Dow leaders who have at least a portion of their role dedicated to implementing sustainability actions and the 2025 Goals into their business, function and/or geography.

- **Sustainability Network:** More than 1,200 Dow employees are on distribution lists for our Sustainability Network, which gathers Dow people together globally and regionally for monthly training. In addition, a monthly newsletter provides information on specific events (e.g., business-specific initiatives, local Earth Day). When employees express interest in sustainability, they are invited to join this entry-level opportunity to engage in sustainability-related events and receive regular updates.





Inclusion and Diversity

At Dow, global inclusion and diversity (I&D) is rooted in our culture and core values. We believe that a diverse and inclusive culture that values and embraces differences is key to our Company’s success. It contributes to making Dow a great place to work, enhances our innovation and customer experience, and strengthens our understanding of the communities we serve. It is also a contributor to sustainable business growth.

As we move forward following the separation from DowDuPont in 2019, we are accelerating our actions and deepening our commitment to strengthening inclusion and diversity. In 2017, we appointed our first chief inclusion officer, Karen S. Carter, and implemented a focused and holistic I&D strategy that is now part of Dow’s business strategy with a governance structure, key areas of focus and measures in place for an effective, sustainable strategy implementation and sustained performance.



Based on extensive external and internal research, the Office of Inclusion identified seven foundational pillars that encompass all dimensions of Dow’s business strategy. The pillars are:

- **Governance:** Institutionalize an inclusive culture.
- **Customers:** Deliver an unparalleled customer experience.
- **Talent:** Increase employee engagement and create an environment where everyone can thrive.
- **People leaders:** Cultivate an inclusive culture.
- **Suppliers:** Achieve top benchmark performance in supplier diversity.
- **Communities:** Strengthen communities where we live, work and do business.
- **Reputation:** Establish a leadership position and be recognized as a great place to work.

We have identified five areas in which we intend to deliver concrete, visible and meaningful results globally by 2020:

- Address diversity dimension gaps in employee perceptions of equal opportunity and valuing diverse perspectives.
- Activate Employee Resource Groups (ERGs) and align their strategies and actions with Dow’s business imperatives.
- Accelerate our spend with diverse suppliers and achieve top benchmark performance.
- Advance representation globally and across multiple dimensions of diversity.
- Achieve targeted premier recognition globally.

We will measure our progress through improvements in ERG engagement, workforce and leadership representation, supplier diversity, employee perceptions of our inclusive culture, and achieving external recognition as a great place to work.

More than 500 employees from more than 30 countries and diverse job roles gathered in Houston in 2018 to attend EMERGE, our first all-Employee Resource Group (ERG) Conference. The highly interactive event focused on building a culture of inclusion at Dow and elevating the role of ERGs, so they emerge as true business partners and change agents. Employees embraced Houston – the most diverse metro area in the United States – and its vibrant neighborhoods, volunteering to help alleviate community challenges from food security to disaster relief to neighborhood revitalization. Employees worked with nine community partners, including St. Bernard Project, KIPP Peace Elementary School, Kids Meals, Inc., Finca Tres Robles, Target Hunger, Project Row Houses, Keep Houston Beautiful, Hermann Park Conservancy and NetWork Volunteers, to make an impact through volunteer service across the city.

Diversity of Governance Bodies and Employees GRI 405-1

The Dow Board as of the Separation on April 1, 2019, is comprised of 9 independent directors and chief executive officer Jim Fitterling with diverse experience and credentials, selected for their acumen and ability to challenge and add value to management.

For information about the DowDuPont Board as it existed prior to April 1, 2019, and throughout the 2018 calendar year, refer to the 2018 DowDuPont Annual Proxy Statement, which can be found at: <http://www.dow-dupont.com/investors/dowdupont-filings-and-reports/default.aspx>.

Gender and Age Composition of Board of Directors

Board of Directors	
Female	30%
Male	70%
Under 30	0%
30-50	0%
Over 50	100%

For other employee categories, please refer to disclosure 102-8. To learn more about our Board, see disclosure 102-22, Composition of the Highest Governance Body and Its Committees.

“

EMERGE 2018 was not just a moment in Houston, but is a powerful movement in our Company and communities. Our commitment to building sustainable communities recognizes that we are stronger when we work together.

Rob Vallentine, president of The Dow Chemical Company Foundation and director of Global Citizenship.

Corporate Citizenship

Engaging for Impact at the Intersection of Sustainability, Innovation and Citizenship

Global Citizenship at Dow

Each day, Dow people are seeking solutions to the complex environmental, economic and social challenges facing our world. Through global citizenship, we put into action the Company’s commitment to advance human progress by striving to create sustainable communities.

As part of our efforts, we look for solutions to enable economic development, sustainability and education that lead to socially healthy and resilient communities, while also supporting and furthering business success, in alignment with the Company’s 2025 Sustainability Goals. Our holistic approach promotes relevant, long-term change for communities by applying integrated solutions and cross-sector collaborations.

Seek Together™

Innovative | Customer-Centric | Sustainable | Inclusive

Cultivating Inclusive LEADERSHIP

How can we use the power of collaboration to develop inclusive leaders who inspire positive change?

Sparking Sustainable INNOVATION

How can our science and innovation help transform more lives?

Developing a Ready WORKFORCE

How can we create the next generation of diverse leaders and innovators?

Engaging for Impact: Employees, Communities and Customers

Led by company ambition. Fueled by volunteer service.

68

The Dow Chemical Company

69

dow.com/sustainability



The passion and expertise of our people are the heart and soul of our work. In support of our goal to positively impact the lives of 1 billion people across the globe by 2025, Dow people are committing their time and talents to make a difference.

In fact, according to Dow’s 2018 Global Employee Opinion and Action Survey, 71 percent of employees stated that they had volunteered their time and/or skill sets, outside of daily work responsibilities, in support of community and/or global challenges.

**All IN: Building Engagement Through Inclusion and Diversity**

Our employees are the face and story of diversity at Dow, and together we aim to create inclusive places to work and communities to call home. Their different perspectives reflect the rich depth of experience and backgrounds that make Dow a world leader in science and technology, and a place where people can bring their whole selves to work.

**New VETNET Initiative Provides Disaster Relief Support to Team Rubicon:** Far from the nearest Dow site, Hurricane Florence made landfall in Wilmington, North Carolina, in September 2018, bringing significant loss of life, historic flooding, property damage and economic

losses in the billions of dollars. The response provided a unique opportunity for volunteers from across the nation, including Dow employees, to come together and make a difference.

For the past three years, Dow has partnered with Team Rubicon, an organization that uses the skills and experiences of military veterans and civilians to rapidly deploy emergency response teams and support first responders, medical professionals and tech solutions in providing disaster relief. Employees have volunteered with the organization in Dow communities following flooding in Midland, Michigan, and Hurricane Harvey in Texas.

**Investing in Innovative, Inspired and Inclusive Young Leaders Across the World**

**WE Are Innovators:** Whether it is helping people gain access to healthy food, efficient transportation and infrastructure, safe housing, sustainable energy or protecting the local environment, this unique campaign is designed to inspire youth to address challenges through STEM skills. Education modules, mentorship and tools are provided for students to innovate a solution to a local or global challenge, with a chance to enter their project to win a grant for their community, or participate in a service-learning trip.



At Dow, we value the strong foundation of discipline and unique skills of our employees with military training – and so do communities in need. That’s why in 2018 we sent three of our VETNET employee volunteers to join Operations Silver Sun, Team Rubicon’s response to Hurricane Florence’s devastation in North Carolina. These employees joined 60 other U.S. veterans for a week, helping muck out flooded homes and move fallen trees. “Helping homeowners who had lost so much and joining so many veterans like me was a humbling and rewarding experience,” said Tim Mueller, a marine veteran and instrument engineer at the Houston Dow Center.

This campaign gave youth across the globe an opportunity to apply science and chemistry to make life-changing impacts on today’s major issues.

**More Than Robots:** Through Dow’s strategic partnership with FIRST Robotics, Dow STEM Ambassadors mentor youth teams by building science, engineering and technology skills that inspire innovation and foster self-confidence, communication and inclusion. In 2018, nearly 200 teams in six countries were sponsored by Dow.

Each year, high school students from all over the world meet for a new edition of the FIRST Robotics Competition. In 2018, there were more than 3,000 teams worldwide, from which about 100 are formed by Mexican students. Two of these teams, the Pink Hawks, the first 100-percent Mexican women-registered team, as well as the WinT team, which ranks in the regional top 10, have been supported by Dow since 2017.

**Dow Leadership Academy in Louisiana:** Thirteen male students from White Castle High School in White Castle, Louisiana, are in the second of three years of an intensive leadership and mentoring experience that emphasizes the importance of academic success, community involvement and workplace readiness. Students

are provided the opportunity to connect with Dow employees and local business owners. The program is based around five program values: STEM career exploration, communication skills and social graces, pillars of leadership, financial literacy and mentorship. Through mentorship, the students receive one-on-one support from Dow employees focused around the core values of the program.



4

QUALITY EDUCATION

**UN SDG ALIGNMENT**

This activity is an example of Dow contributing to sub-goal 4.4: “By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.”

**Enhancing Shared Value & Engaging the Value Chain Through Partnership**

**Business Impact Fund:** Now in its third year, Dow’s Business Impact Fund unlocks business opportunities by solving social problems through our technology and expertise. Seven projects

across the globe were supported in 2018 with approximately \$1.3 million in seed funding.

Projects in 2018 included a public-private partnership for sustainable plastic and waste management in Thailand, expansion of the Hefty® EnergyBag program in Canada, waste collection and recycling in Jordan, safer and sustainable fashion industry practices in Ethiopia, enhanced waste collection structure in Brazil, green bike lanes in the United States, and addressing a circular economy and plastic waste in South Africa.

**Example: Reduction of Water Usage and Chemical Waste in Ethiopian Fashion Industry**

According to the United Nations Economic Commission for Europe, the fashion industry is the second largest user of water globally, consuming 2,700 liters per cotton shirt, which is equivalent to water used by approximately 300 Ethiopians per day. This project, in partnership with Dow Industrial Solutions, is designed to educate textile workers in Ethiopia on proper resource management, as well as to the protection of Ethiopian consumers and their environment.

6

CLEAN WATER AND SANITATION

**UN SDG ALIGNMENT**

This activity is an example of Dow contributing to sub-goal 6.4: “By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.”

“We are thrilled to partner with Dow to recognize these young change-makers who are leading this generation into a more sustainable future with their creativity and innovation. Each winner has an unwavering commitment and focus on tackling today’s most challenging issues through STEM solutions, and we look forward to supporting them as they continue to use science for social good.”

**Craig Kielburger, co-founder of WE**

Through WE Are Innovators, students across the world are learning they can use their problem-solving skills to help find sustainable solutions in their own communities. Students Shane Duncan and Asgar Ali, and their teacher, Andrew Bachman, from Pottstown High School in Pennsylvania, developed an innovative tool to slice fruit to prevent produce waste at their school. Through WE Are Innovators, they joined 17 students and teachers from across the U.S. and Thailand on a “ME to WE” service-learning trip to the Ecuadorian Amazon. Students had an opportunity to become part of a community working toward sustainable change and implement their solutions in their schools and local communities. Watch their [story](#) and their [trip](#).





Highlight: Advancing the Plastic Waste Value Chain in Ghana

In 2018, the Ghana Recycling Initiative by Private Enterprises (GRIPE) launched a school recycling program in collaboration with NGO Environment 360 to support Fan Milk “Pick-It” Project in Ghana. GRIPE is an industry-led coalition formed under the Association of Ghana Industries (AGI) with a stake in the plastics sector to integrate sustainable waste management solutions, particularly around plastics. GRIPE was founded in November 2017 by eight multinational companies with varied products with proven track records of involvement in sustainability actions concerning plastics in other countries. The founding members are Coca-Cola Bottling Company of Ghana; Dow Chemical West Africa Limited; Fan Milk Ghana Limited; Guinness Ghana Breweries Limited; Nestlé Ghana Limited; PZ Cussons Ghana Limited; Unilever Ghana and Voltic (GH) Limited.

The main aim of the school recycling program is to increase plastics collection rates, thereby decreasing plastics sent to landfills and pollution. Additionally, the project will drive recycling, as the collected waste will be sent to a sorting center where it will be sold into second-life applications. While the work of the informal sector and waste-pickers accounts for a significant amount of plastic waste collection, setting up formal waste

separation systems in our homes, schools, offices and institutions will help increase recycling and awareness. Children will be taught about the value of waste: that it is not waste but a resource. They will learn to separate their waste and understand that waste will then be sent to the sorting center where it will be sorted for use in end-of-life applications to drive a circular economy.

Aligning Passion to Purpose Through Engagement

**Building the Workforce of Tomorrow:** Every day around the world, Dow STEM Ambassadors share their passion and expertise with students, educators and their local communities through career talks, hands-on activities, professional development and much more. In total, there are 2,300+ Dow STEM Ambassadors who in 2018, visited approximately 1,000 classrooms, engaged 200,000+ students inside and outside the classroom, and supported 4,500 educators through STEM outreach.

**Developing Skills Through Global Pro Bono:** Through innovative leadership development programming conducted in partnership with PYXERA Global, 50 Dow leaders from around the world applied their skills and expertise to community-based problems by working virtually and in-country with 12 non-governmental

organizations (NGOs) in India, Rwanda and Senegal. The result is exceptional training for the employees, resolution of long-term issues for the NGOs, and business penetration into new markets for Dow. In total, nearly \$1.5 million USD of pro bono consulting service was provided by Dow employees.

Forty-three Dow employees participated in the sixth annual Leadership in Action Program, held in Mumbai, India. This year’s program was designed to address pressing local challenges related to sustainable housing, environmental cleanup, diversity and inclusion, circular economy, and education and career readiness.

Leadership in Action has engaged more than 280 employees who have worked with approximately 50 NGOs to benefit communities in the Philippines, Ghana, Ethiopia, Indonesia, Vietnam and India.



These four weeks have had the purpose of adjusting the lenses through which I view the world. Teamwork was key for project development. It was very rewarding to be able to apply my expertise in the health sector, a completely different industry, and generate positive impact.

Roberta Lopes de Costa Issa, Olefins & Aromatics supply chain director for EMEAI, and a participant in Global Health Corporate Champions

Grant Giving

Total Corporate and Foundation Contributions:  
**\$39.1MM**

Product and Equipment Donations:  
**\$4.4MM**

Engaging Employees for Impact

 **125,000**  
Volunteer Hours

 **14,000**  
Volunteers

 **2,000**  
Projects

A New Day. A New Dow. Developing an Engaging for Impact Volunteer Blueprint for the New Dow

Volunteerism aligns to our company ambition and acts as an extension of our brand by helping us build more resilient communities, engage our employees and contribute to our business success. It also helps build the career skills and personal development of our employees. Leveraging employee and non-profit partner

insights and industry best practices, Dow is partnering with Points of Light, the world’s largest organization dedicated to volunteer service, to develop a blueprint that supports the new Dow, our businesses and communities, and the employees that make us great. This blueprint will be the foundation of our volunteer strategy for the new Dow and will ensure that we maximize future impact – aligning employee passion with purpose while delivering social and business value.

STEM Ambassadors

 **2,300+**  
STEM Ambassadors

 **850+**  
Events

Classroom Visits:  
**1,000**



Volunteer Hours:  
**30,000+**



Students Impacted in Classroom:  
**30,000+**

Students Impacted Outside the Classroom:  
**170,000+**

Teachers Supported:  
**4,500**

“Dow is committed to sustainability and continues to work towards solutions for global challenges through collaboration with relevant organizations. Our work with the Ghana Recycling Initiative by Private Enterprise is an example of such collaboration and it features a future active project which we intend to see multiply and positively impact the problem by creating a blueprint solution for global application.

Craig Arnold, president, Sub-Saharan Africa



## Employee Health and Safety

**GRI 403-1** Worker protection has been a priority at Dow since the Company's earliest days. With the goal of having every worker go home safely at the end of their work shift, Dow uses a comprehensive, integrated operating discipline management system that includes policies, requirements, processes, best practices and procedures associated with Environment, Health and Safety, as well as Quality, Operations and related external standards. Within this system, we lay the foundational expectations of hazard assessment and risk mitigation, aligned to Responsible Care. At the highest level, we expect each organization within Dow to implement and use Health and Safety Programs to:

- Identify, assess, and eliminate or mitigate hazards

- Prevent unsafe acts and conditions
- Maintain and improve the health of personnel
- Foster communication on health and safety issues

The system is grounded in requirements of the U.S. EPA and OSHA, but incorporates ideas from other global regions, as well as Dow's own more stringent requirements. The management system has been externally audited and found to meet both ISO-14001, ISO-9001 and Responsible Care code requirements. The system applies globally to all Dow premises and JV locations where we have greater than 50 percent ownership (i.e., operational control). Dow's health and safety processes meet or exceed the requirements of most countries in which we operate. All Dow locations are expected to comply with Dow or local requirements, whichever are more stringent.

The Company management system covers Dow workers regardless, whether they are working on or off Dow premises, and all contracted workers performing work on Dow premises. Workers who deliver materials to company premises only (e.g., package delivery services) are excluded from our full management system, though they do receive fundamental training if they are to enter any of our sites. The management system is designed and implemented by professionals employed or contracted by Dow (e.g., Health Services, Industrial Hygiene, EH&S Delivery).

Aligned with the global management system, every work group at Dow must establish site- and unit-specific procedures that assure full implementation of all requirements within our standards and compliance with local regulations. Required self-assessments and independent internal audits monitor compliance and identify

best practices, with audit results reviewed by Dow's EH&S Committee. Consistent with Dow's continuous improvement mindset, the management system was streamlined in 2017-18 to improve usability and address gaps; updates are to be fully implemented and completed in 2019.

**GRI 403-2** Leading indicators of Occupational Health and Safety performance are a cornerstone of Dow's worker protection program. A consistent set of globally applied leading indicators is complemented by locally defined leading indicators. Globally applied leading indicators include:

- Non-injury (near miss) situations with potential to cause a life-altering impact or fatality had the situation been only slightly different ("non-injury pLIFE event")
- Percent completion of training for Life Critical Standards
- Internal EH&S management system audit results
- Open actions from Reactive Chemical and Process Hazard Analysis reviews
- Loading rate for Management of Change actions, a measure of the amount of change work managed by a work group, normalized by worker capacity to implement such actions

Our routine hazardous analysis programs include:

- Periodic health exams informed by the employee's role and potential exposure to specific workplace hazards
- Qualitative exposure assessment for chemical, physical, ergonomic and biological hazards overseen by professional Industrial Hygienists
- Regular evaluation and periodic re-evaluation

of process safety hazards via our Layers of Protection Analysis

- Personal safety risk analysis performed as a part of numerous work processes (e.g., permit to work/Safe Work Permit, pre-task analysis, pre-startup safety reviews)

Effective, integrated work processes and committed people are key to protecting all workers. Workers have direct line of sight to potential hazards. They are expected and encouraged to identify, report and intervene when unsafe or unhealthy work conditions are observed. They also positively recognize coworkers making safe choices. Worker input on hazards and solutions is part of local near-miss programs and leveraged where appropriate. Workers are protected from reprisal via our global Ethics policy, part of our Diamond Standard.

Apollo™ Root Cause Investigation methodology is used for all recordable injuries and near miss

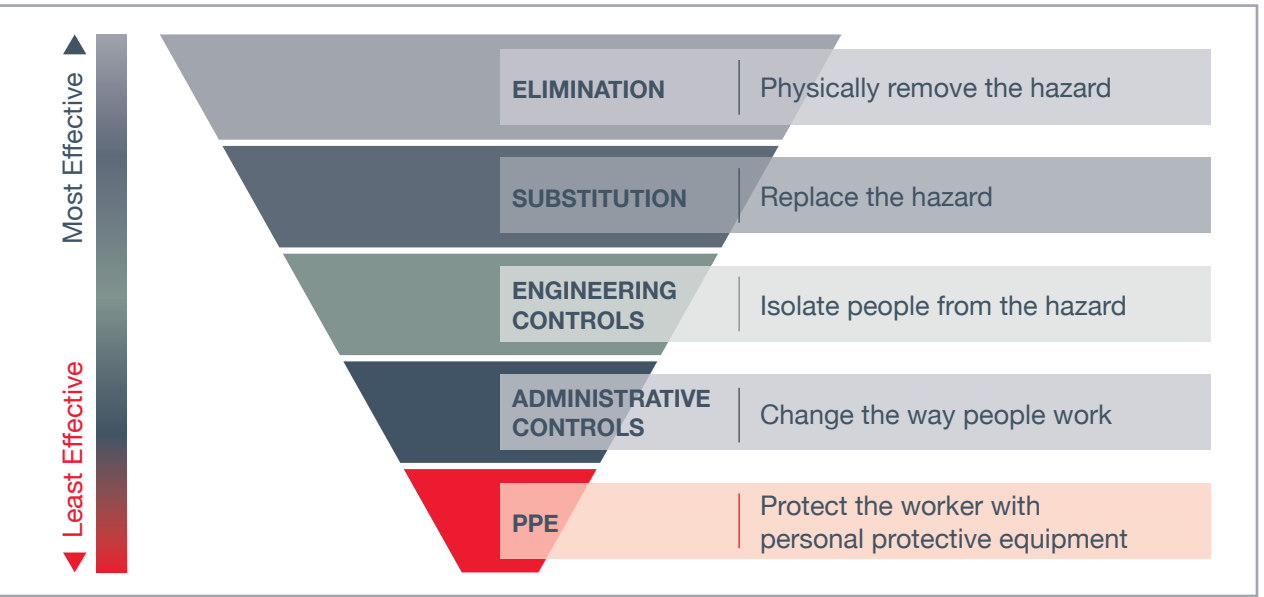
situations where potential existed for a LIFE-impacting injury had something been different. Consistent use of the methodology ensures we understand the cause and take corrective actions directly at the point of the problem, as well as at the strategy and management system levels. Significant learnings are shared globally through our Learning Experience Report process. The two most significant events in 2018 led to adjustments to our requirements in 1) the application of protective layers at railroad crossings, and 2) in our work process for performing Machine Risk Assessments (methodology to assess risk specifically for processes that have machine-human interface).

Once hazards are identified, we follow the hierarchy of controls to identify feasible and effective solutions. The clear expectation to use the hierarchy of controls is now included in our Life Critical Standards (e.g., fall prevention, confined space entry, hydroblasting and pressure washing,



**FOUR POUNDS:** That's the average amount of waste each person on Earth produces in a day. In 2018, we challenged not only employees, but our friends and families, to participate in cleanup events around the world. In a few short months, we participated in 57 cleanups and removed 54,000 pounds of waste from waterways – making it our largest volunteer effort in Company history. In 2019, we plan to double that with a goal of collecting more than 100,000 pounds of trash from more than 100 sites around the world. By continuing to collaborate with NGOs and industry partners, we can find new solutions to reduce plastic waste in our oceans and other waterways.

### Hierarchy of Controls





electrical safety, isolation of energy) and most industrial hygiene standards (e.g., ergonomic, respiratory protection). Use of hierarchy controls is making an impact on worker protection. In 2018, use of technology led to the elimination of more than 670,000 hours of high-risk Life-Critical work (e.g., confined space, work at elevations, high-pressure cleaning).

Dow's efforts to eliminate risk have been instrumental in driving fundamental change in the service industries that support our operations. Over the last 10 years, Dow's influence on the hydroblasting industry has led to far greater availability of automated hydroblasting options for use by all industries. Similarly, in 2018 Dow took action in response to a severe contractor injury to drive the implementation of anti-crush technology on all self-driven personnel lifting devices to be used at Dow locations globally. This has resulted in accelerated development of these safeguards on such equipment by their manufacturers.

**GRI 403-3** With more than a century of experience in occupational health, Dow is committed to worker health protection. We have honed an effective, systematic approach to Total Worker Health™ that comprehensively controls workplace health risks, protects workers and improves the health of Dow people:



As part of our Total Worker Health pilot program, we are developing wearable technology that would track vital signs, eye movement and head positioning for night shift workers who operate motor vehicles or heavy equipment. When we have people monitoring critical processes, we want them to be at a high state of alertness.

**Dave Ott, who leads the Total Worker Health team**

- **Recognizing hazards:** We rely on toxicologists, industrial hygienists and physicians to apply their expertise and knowledge of the scientific and medical literature. We maintain a team and work processes to monitor trends and regulations in worker health assessment. We engage local EH&S delivery personnel to help identify workers at potential risk. Worker health hazards are considered as part of the risk review process for new products and changes in the manufacture of current products.
- **Reducing risks:** We use the hierarchy of controls to mitigate worker health risks. Industrial hygiene guidelines drive use of engineering controls and appropriate personal protective equipment. Travel health services (i.e., counseling, vaccinations and access to local care) reduce risk for endemic or acute health problems while on business. In addition to traditional occupational health risks, we minimize other workplace health risks through fitness for duty, workplace tobacco and substance-use policies, active workstations, shiftwork health education and a fatigue management strategy. We recently launched a technology-use strategy to reduce worker health risks through improvement in awareness, architecture, organizational support and adherence.

- **Screening for illness:** Employees who work in areas with high-risk occupational hazards (e.g., hearing conservation, confined space entry, benzene, post-asbestos, butadiene, silica) are monitored medically and tracked through our health records system. All workers are provided baseline and periodic medical screening, testing, evaluation and health counseling to identify and control health problems. We use the same rigorous standards globally. Health results are carefully monitored through health trend summaries and directed health epidemiology studies.
- **Confirming the effectiveness of our system:** We use medical surveillance to assess patterns of recognized occupational illnesses. We also use epidemiology to perform population health surveillance for serious illnesses such as cancer. We track health-related recordable injury and illness cases (i.e., results from potential exposure to chemical, physical or biological substances or ergonomic workplace stressors), with annual improvement targets.

Similar to other environment, health and safety standards, occupational health requirements are global and meet or exceed local regulations. Every employee has access to occupational services at no cost through an on-site, Company-managed clinic (93 locations in 2018) or an off-site provider managed by Dow Health Services.

Clinical treatment is available to all employees for work-related injury or illness, including specialized protocols for Dow's workplace. We maintain close relations with and provide training where valuable to local providers, including emergency rooms, to ensure appropriate care for any potential work-related exposures, high-care quality and return to health.

Because there is a company requirement for Health Services, employees can access occupational health care on paid worktime. Health services materials and global programs/communications are translated where needed to reduce barriers to information and access.

We maintain active crisis planning teams to monitor needs and ensure appropriate plans are in place for emerging health risks and/or pandemic. This includes protecting the health of our employees and families as a result of extreme weather. Crisis plans are activated when necessary and may include direct support for the community.

Occupational health services are audited as part of the integrated EH&S audits and examined through annual self-assessment for on-site clinics. Off-site clinics are also assessed for service quality to Dow employees. Additionally, Dow maintains legal contracts with off-site clinics and vendors used as regular providers of occupational health services, to help ensure service quality, data protection and consistency of offering. Credentials of on-site providers are reviewed annually to ensure both required and Company-recommended certifications are current and complete. Internal training and sharing of best practices is offered throughout the year; most are recorded to allow viewing for all global staff and/or when not seeing patients. Required and some value-added continuing education for Dow health providers is paid for by the Company.

Protection of data privacy is both a legal requirement and an expectation of our people. For these reasons, we uphold the highest standards for protection of personally sensitive information, including health data. We have a Company Data Privacy Officer, internal and external legal counsel, and a Health Services Data Privacy



subject matter expert. We follow General Data Protection Regulation standards globally and use a risk review process for all vendors/tools with access to personally sensitive data. We maintain an externally validated internal Human Studies Review Board for any human health studies conducted on Dow workers or on Dow's behalf. We follow conservative guidelines for sharing aggregate data, to avoid ability to identify any individuals or raise employee concern that their personal data is not highly protected.

Our Health Services and Industrial Hygiene

function and personnel align to the chief sustainability officer, with an arms-length relationship to Human Resources and Operations. Medical data is maintained by health professionals. Access to personal health data is very limited and tightly controlled, and all with access are required to take annual data privacy training specific to protection of health data.

**GRI 403-4** At all Dow locations globally, workers are able to participate in Health and Safety teams at the facility and site level. At the local level, employees participate in incident and near-miss



root cause investigations, “fresh eyes” assessments, internal audits and numerous other continuous improvement activities. More than 80 percent of workers globally are represented in formal joint management: worker safety committees as a result of government requirements or Company-union agreements. In most cases, these committees meet at least monthly with the primary purpose of reviewing and acting upon worker safety data and concerns, and developing implementation plans for new or improved government or Company health and safety requirements. The workforce receives regular communication on improvements through rigorous change management practices, learning experience reports, safety meetings, tailgates and safety stand-downs.

Each standard that is part of Dow’s health and safety management system has one or more standard owner who accepts continuous improvement input from any employee via the Environment, Health and Safety delivery organization and through a feedback tool on the Standards webpage. Improvements are evaluated and prioritized. If a global policy change is indicated, the change is presented to a global policy team for consideration and final approval. Locally, employees are directly and actively engaged in improving local policies, procedures and safeguards (e.g., Personal Protective Equipment selection, unsafe conditions and near-miss programs).

### Safety with Speed

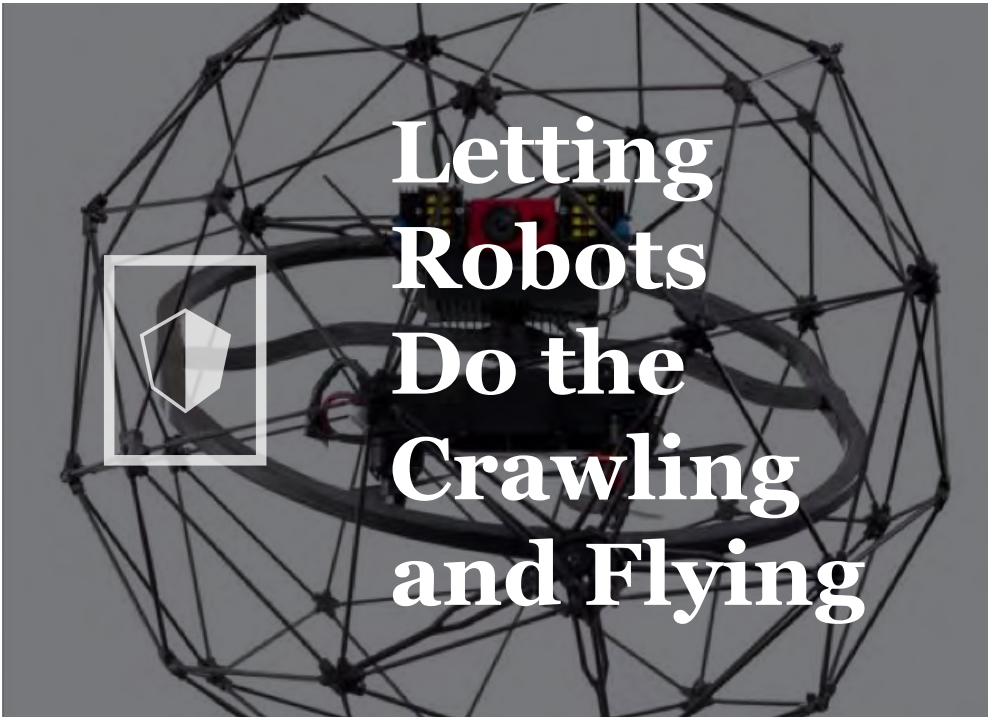
We are introducing electronic safe work permits – eSWPs – instead of paper versions. This streamlined, digital version improves the quality of safety conversations around the world and increases efficiency on critical tasks. Fundamental to this electronic system is the ability to provide input on the hazards and mechanisms to eliminate or mitigate risk for permitted work during all phases of planned work – from ideation through planning to permitting.

**GRI 403-5** We provide health and safety training at no cost to workers. Training is role-based and assigned to workers when they take on a specific role (e.g., Safe Work Permits Issuer, Red Tag Lock-out Isolator). For workers who are not employees but whose work and/or workplace is controlled by Dow, access to such training is provided free of charge within the constraints of co-employment limitations. Where co-employment concerns prevent access to such materials, we work with and promote the availability of similar training with contract companies or through regional contractor safety councils.

Health and safety training effectiveness is evaluated periodically via participant feedback and purposeful evaluation of training content against commonly defined adult learning principles. A variety of training methodologies are utilized, including regular informal emphasis topics, communities of practice, interactive e-learning and instructor-led offerings for the most critical or technical topics. For our most significant, life-critical standards, training is developed centrally, translated into local languages and deployed globally to ensure consistency of understanding and application.

In addition to formal training, informal safety training is part of every shift, every team and every meeting across Dow. Safety moments, tailgates, on-the-spot training and safety stand-downs reinforce the culture of safety and the role every employee has to support each other’s health and safety.

**GRI 403-6** Our commitment to worker health is not limited to occupational health risks. We started a comprehensive wellness program more than 25 years ago because we recognized the value of good health of our employees, their families and our communities.



# Letting Robots Do the Crawling and Flying

Whether entering tanks or working from scaffolding sometimes hundreds of feet high, inspecting hard-to-reach places can put people at risk. That is why we are using robotics technology at sites around the world. We’re letting robots do the crawling in tank inspections and small unmanned aerial systems do the flying for elevated work, so our people can avoid high-risk situations. Collaborations with organizations such as Sprint Robotics, the American Society of Mechanical Engineers and the American Petroleum Institute have helped advance our thinking and our performance. By using robotics in 2018, we eliminated more than 1,000 confined space entries and 1,000 external inspections that would have required elevated work. Already, our efforts have received recognition and achieved milestones. In 2017, our Unmanned Aerial Vehicle and Robotic Platform Initiative received the Operational Excellence Leadership Award from the Manufacturing Leadership Council. We also are the first chemical and materials science company to obtain a permit from the Federal Aviation Administration for using small airborne devices in and around manufacturing facilities.

In 2018, we used design thinking to update our approach to well-being that is holistic, global, employee-centered and outcomes-driven. It will drive health support across four pillars:

- **Work:** Change job characteristics detrimental to well-being and help employees use their work to optimize well-being
- **People:** Foster supportive and valued relationships between employees and between employees and leaders; protect workers
- **Place:** Create a supportive and thriving environment that enables the well-being of all employees and is conducive to healthy choices
- **World:** Realizing we can’t achieve optimal well-being alone, we’ll seek to create and implement solutions with our vendors, communities, peers, customers and governments

New well-being aspiration: **100% of Dow employees are their BEST SELF** for work, home and play.

Our well-being strategy is jointly sponsored by the chief human resources and chief sustainability officers. It is cooperatively owned and activated by

Health Services, EH&S Operations, Employee Communications, Learning & Training, Total Rewards, Employee Engagement, Industrial Hygiene, Corporate Facilities, Corporate Citizenship. Together we will take a cohesive and systemic (vs. programmatic) approach to support the well-being of all Dow employees and make best use of our available resources.

We recognize that health is multifaceted, so we provide support across the following dimensions: emotional, financial, social, purpose, occupational, physical, intellectual and environmental. A few of our global supports are:

- **Healthy Culture Index:** Measures a site’s alignment with evidence-based best practice well-being strategies including access to healthy foods, relaxation spaces, lactation support, peer and leader support for health, and access to physical activity. In 2018, 45 percent of the Dow population worked at sites at the highest achievement levels in the index; this is more than halfway to the 2025 target. Peer mentors help sites create and implement improvement plans.
- **Employee Assistance Program (EAP):** Available to all employees and their families, globally, for help with general stress, substance use, financial struggles and family relations. Our EAP program also provides on-site emotional health support in response to a personal or work-related incident.
- **Case Management:** Helps employees maneuver the healthcare systems, return to health as soon as possible and maintain their progress. This is offered globally through Dow Health Services and where available by local insurance or worker compensation providers.
- **Health Benefits:** Seeks to improve the health of Dow employees by removing barriers to accessing and paying for appropriate, quality healthcare around the world. This is done through both medical insurance and other health offerings for employees. The level of support is determined based on the needs of our workforce within a given geography.

Efforts to optimize total worker health are recognized annually. The aggregate status in seven risk factors is tracked across the globe. In 2018, there was a 16 percent improvement in the poor diet habits group and an 8 percent improvement in the blood pressure high-risk group from the previous year’s results. Annually, Company awards are given to sites achieving significant positive health results and to individuals who make significant contributions to the health of others.



Dow Family Health Centers – an Effective Model for Health Care

Dow Family Health Centers are on-site, Dow-sponsored, third party-managed Primary Medical Homes. They are currently at three locations in the United States, with a fourth to open at Dow’s corporate headquarters in 2019. At the two-year anniversary, our Lake Jackson, Texas, Dow Family Health Center experienced:

- Total medical and drug costs 26 percent less than non-users
- A 4 percent decrease in total medical and drug costs, vs. 11 percent increase for non-users
- An admissions rate that is 53 percent lower than non-users and 14 percent below benchmark
- Higher compliance with recommended care and preventive services

**GRI 403-8** All workers who are not employees but whose work and/or workplace is controlled by Dow are required to comply with 100 percent of health and safety management system requirements. We employ a comprehensive permit-to-work system that facilitates a robust dialogue around hazards and mitigation of such hazards for each task.

Our system has a requirement for Management System Review built in so that the efficacy is evaluated regularly. Additionally, we maintain an independent internal management system audit process, with accountability flowing directly to the CEO, independent of the Operations organization. The audit process ensures that every Company location, regardless of purpose, is audited every 3-5 years. Audit frequency is determined based on the relative risk of the

activities at each location. Auditors are trained and certified in each topic area they audit against. Gaps identified in these internal audits are addressed via corrective or preventative actions captured in our global CAPA action repository, with gap closure encouraged within 12 months of the audit.

More than 85 percent of our manufacturing sites globally receive some periodic external audit. These range broadly depending on specific government requirements. For example, more than 85 percent of large manufacturing sites in North America are either OSHA VPP or COR certified. More than 50 percent of external audits globally are broad in nature, covering most topics within the Responsible Care Code or ISO-14001.

Work Related Injury and Illness

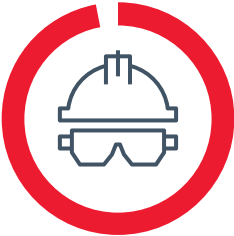
GRI 403-9, GRI 403-10

In 2018 the Company saw two loss-of-life incidents. Both incidents triggered global response and management system change. The first incident involved a truck-rail collision at a crossing at one of our sites. This led to

significant adjustments to our rail crossing warning and barrier systems, and the application of technology to monitor and improve traffic behaviors on our sites. In the latter incident, our machine-guarding risk-assessment methodology was improved and redeployed globally. There were no other high-consequence injuries in 2018.

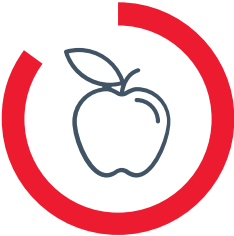
At Dow, demonstration of our commitment to elimination of high-consequence injuries occurs at all levels. In 2018, the top 144 executives of our Company traveled to individual facilities in the third year of our Global Leadership Team visit initiative. In each case, a global leader spends two days at a location focused on observation and dialogue with the work group. The goal of this year’s visit was to elevate the three focus areas of health, inclusion and ethics to achieve excellence in EH&S performance.

It is core to our injury measurement and prevention efforts that we classify incidents by their POTENTIAL to result in LIFE-altering consequences. This allows us to see and focus our prevention efforts on hazards that pose a greater likelihood of a high-consequence injury.



97%

indicated that they are held accountable for doing their work in a **manner that is safe**



85%

indicated that Dow provides a supportive work environment that encourages them to **practice healthy behaviors**



85%

indicated that Dow has a sincere interest in their **health and well-being**

2018 Safety Metrics by Region – Employees and Contractors GRI 403-9, GRI 403-10

	Area	Fatality Count	Fatality Rate	High-Consequences Work-Related Injuries Incident Count (excl. Fatalities)	High-Consequences Work-Related Injuries Incident Rate (excl. Fatalities)	Recordable Work-Related Injuries Incident Count	Recordable Work-Related Injuries Incident Rate	Worker Hours (Based on 2018 Site Hours)	Fatality Count (Illness)	Total Recordables (Illness)
Employees and contractors	ASIA PACIFIC	0	0.000	0	0.00	10	0.07	28,419,074	0	1
	EUROPE/MIDDLE EAST/AFRICA/INDIA	0	0.000	0	0.00	18	0.07	48,194,483	0	0
	LATIN AMERICA	0	0.000	0	0.00	25	0.18	28,099,378	0	0
	NORTH AMERICA	2	0.004	0	0.00	135	0.28	94,991,437	0	2
	All Regions	2	0.002	0	0.00	188	0.19	199,704,372	0	3
Employees only	ASIA PACIFIC	0	0.000	0	0.00	8	0.09	18,253,576	0	1
	EUROPE/MIDDLE EAST/AFRICA/INDIA	0	0.000	0	0.00	10	0.07	29,205,168	0	0
	LATIN AMERICA	0	0.000	0	0.00	13	0.19	13,890,689	0	0
	NORTH AMERICA	1	0.004	0	0.00	81	0.31	52,392,704	0	2
	All Regions	1	0.002	0	0.00	112	0.20	113,742,137	0	3
Contractors only	ASIA PACIFIC	0	0.000	0	0.00	2	0.04	10,165,498	0	0
	EUROPE/MIDDLE EAST/AFRICA/INDIA	0	0.000	0	0.00	8	0.08	18,989,315	0	0
	LATIN AMERICA	0	0.000	0	0.00	12	0.17	14,208,689	0	0
	NORTH AMERICA	1	0.005	0	0.00	54	0.25	42,598,733	0	0
	All Regions	1	0.002	0	0.00	76	0.18	85,962,235	0	0

1) Rates are calculated on the basis of 200,000 hours worked.  
2) Recordable injury rate includes fatalities but do not include first aid visits.  
3) Recordable Injury rate includes Dow employees and contractors performing work at Dow locations.

4) Musculoskeletal disorders are reported using Disclosure 403-9 (all our musculoskeletal are listed as Injuries in our reporting database).  
5) High consequence injuries are Dow's Level 1 injuries, excluding fatalities.  
6) Exclusions: Workers who deliver materials to company premises only (e.g., package delivery services, etc.) are excluded

We have a very robust, globally tracked near-miss program for situations that did not result in an injury but could have been high consequence had something been slightly different. This non-injury potential LIFE event (non-injury pLIFE) data is reviewed weekly at the corporate level to ensure adequate investigation and to identify broadly leveragable learnings. This data is visible to all employees and built into dashboards along with actual injury information for every site, region and business across the Company.

Our Corrective and Preventative Action program ensures that each incident investigated (including all that have a high-consequence potential) has robust corrective and preventative actions applied.

Integrated approaches to both protect health and optimize health are linked at Dow. Employees also respond with their perspective on how the Company is approaching health in our annual employee opinion survey. Results indicated high confidence in Dow’s approach.



Environmental

Dow is committed to world-class environmental, health and safety (EH&S) performance, as demonstrated by industry-leading performance, a long-standing commitment to Responsible Care and a strong commitment to achieve the Company’s 2025 Sustainability Goals – goals that set the standard for sustainability in the chemical industry by focusing on improvements in Dow’s local corporate citizenship and product stewardship, and by actively pursuing methods to reduce the Company’s environmental impact.

To meet the Company’s public commitments, as well as the stringent laws and government regulations related to environmental protection and remediation to which its global operations are subject, Dow has well-defined policies, requirements and management systems. Dow’s EH&S Management System (EMS) defines the “who, what, when and how” needed for the businesses to achieve the Company’s policies, requirements, performance objectives, leadership expectations and public commitments. To ensure effective utilizations, the EMS is integrated into a Company-wide management system for EH&S, Operations, Quality and Human Resources.

It is Dow’s policy to adhere to a waste management hierarchy that minimizes the impact

of wastes and emissions on the environment. First, Dow works to eliminate or minimize the generation of waste and emissions at the source through research, process design, plant operations and maintenance. Second, Dow finds ways to reuse and recycle materials. Finally, unusable or non-recyclable hazardous waste is treated before disposal to eliminate or reduce the hazardous nature and volume of the waste. Treatment may include destruction by chemical, physical, biological or thermal means. Disposal of waste materials in landfills is considered only after all other options have been thoroughly evaluated. Dow has specific requirements for waste that is transferred to non-Dow facilities, including the periodic auditing of these facilities.

Dow believes third-party verification and transparent public reporting are cornerstones of world-class EH&S performance and building public trust. Numerous Dow sites in Europe, Latin America, Asia Pacific, and the U.S. and Canada have received third-party verification of Dow’s compliance with Responsible Care and with outside specifications such as ISO-14001. Dow continues to be a global champion of Responsible Care and has worked to broaden the application and impact of Responsible Care around the world through engagement with suppliers, customers and joint venture partners.

Dow’s EH&S policies helped the Company achieve improvements in many aspects of EH&S performance in 2018. Dow’s process safety performance was excellent in 2018 and improvements were made in injury/illness rates. Safety remains a priority for the entire Company. Further improvement in these areas, as well as environmental compliance, remains a top management priority, with initiatives underway to further improve performance and compliance in 2019 as Dow continues to implement the Company’s 2025 Sustainability Goals.

Dow manages environmental data for reporting with a corporate database called the Global Emissions Inventory (GEI). The emitting businesses track and record their emissions in GEI, the central database used as the basis for regional and global reports of emissions. Each facility has an EH&S focal point responsible for collecting and reporting all waste and emission data to the GEI. In 2018, Dow completed a project to update the GEI tool. Improvements to the tool reduce effort and improve quality of the annual data review process.

Materials Used by Weight or Volume  
GRI 301-1, GRI 301-2, GRI 301-3

The Company operates in an integrated manufacturing environment. Basic raw materials are processed through many stages to produce a number of products that are sold as finished goods at various points in those processes. The major raw material stream that feeds the production of the Company’s finished goods is hydrocarbon-based raw materials. The Company purchases hydrocarbon raw materials including ethane, propane, butane, naphtha and condensate as feedstocks. These raw materials are used in the production of both saleable products and energy. The Company also purchases certain monomers, primarily ethylene

Environmental Metrics Summary

Metric	Unit	2017	2018
Energy Intensity	Btu per lb of production	4528	4625
Scope 1 GHGs as CO <sub>2</sub> e	millions of metric tons	25.6	26.6
Scope 2 GHGs as CO <sub>2</sub> e	millions of metric tons	8.8	9.3
Combined Scope 1 and 2 GHG Intensity	lb of CO <sub>2</sub> e per lb of production	.763	.782
Scope 3 GHGs as CO <sub>2</sub> e	millions of metric tons	75.7	75.7
Emissions of Ozone-Depleting Compounds – Corporate Totals as CFC-11e	metric tons	8	6
Nitrogen Oxide Compound Emissions	metric tons	19,312	19,220
Sulfur Oxide Compound Emissions	metric tons	2,906	2,630
Emissions of Volatile Organic Compounds	metric tons	8,759	8,875
Chemical Emissions to Air and Water	metric tons	16,836	17,076
Emissions of Priority Compounds to Air and Water	metric tons	273	268
Water Intake	millions of cubic meters	3,141	3,343
Wastewater	millions of metric tons	141	143
Wastewater Intensity	lb of wastewater per lb or production	3.1	3.1
Waste	millions of metric tons	1.74	1.76
Waste Intensity	lb of waste per lb of production	0.039	0.038

and propylene, to supplement internal production. The Company purchases natural gas, primarily to generate electricity, and purchases electric power to supplement internal generation.

Key raw materials purchased for use in the manufacturing process include: acetone, benzene, butane, condensate, electric power, ethane, hexane, methanol, methyl methacrylate, naphtha, natural gas, propane, pygas, silica, styrene and wood pulp. Key raw materials that are produced internally and procured from external sources for internal consumption include aniline, aqueous hydrochloric acid, butyl acrylate, chlorine, ethylene, octane, propylene and silicon metal. Hydrogen peroxide is produced internally and procured through a consolidated variable interest entity and a joint venture. The Company had

adequate supplies of raw materials in 2018, and expects to continue to have adequate supplies of raw materials in 2019.

Total quantity of raw materials is not aggregated across the corporation, as it would not provide a metric that would drive improvements. We do track raw material efficiency as one of the metrics that comprise the Environmental Stewardship Index, one of four indices tracked under the World-Leading Operations Performance Goal (see pages 30-31). To assess the raw material efficiency index, each of the Company’s business envelopes determines a material efficiency metric relevant to their business, sets annual commitments for their metric translated into monetary savings, and reports regularly on progress to business and corporate leadership. In 2018, businesses

achieved savings of \$31.1 million. Measuring material efficiency provides a direct driver to operations to improve through activities that include these and others:

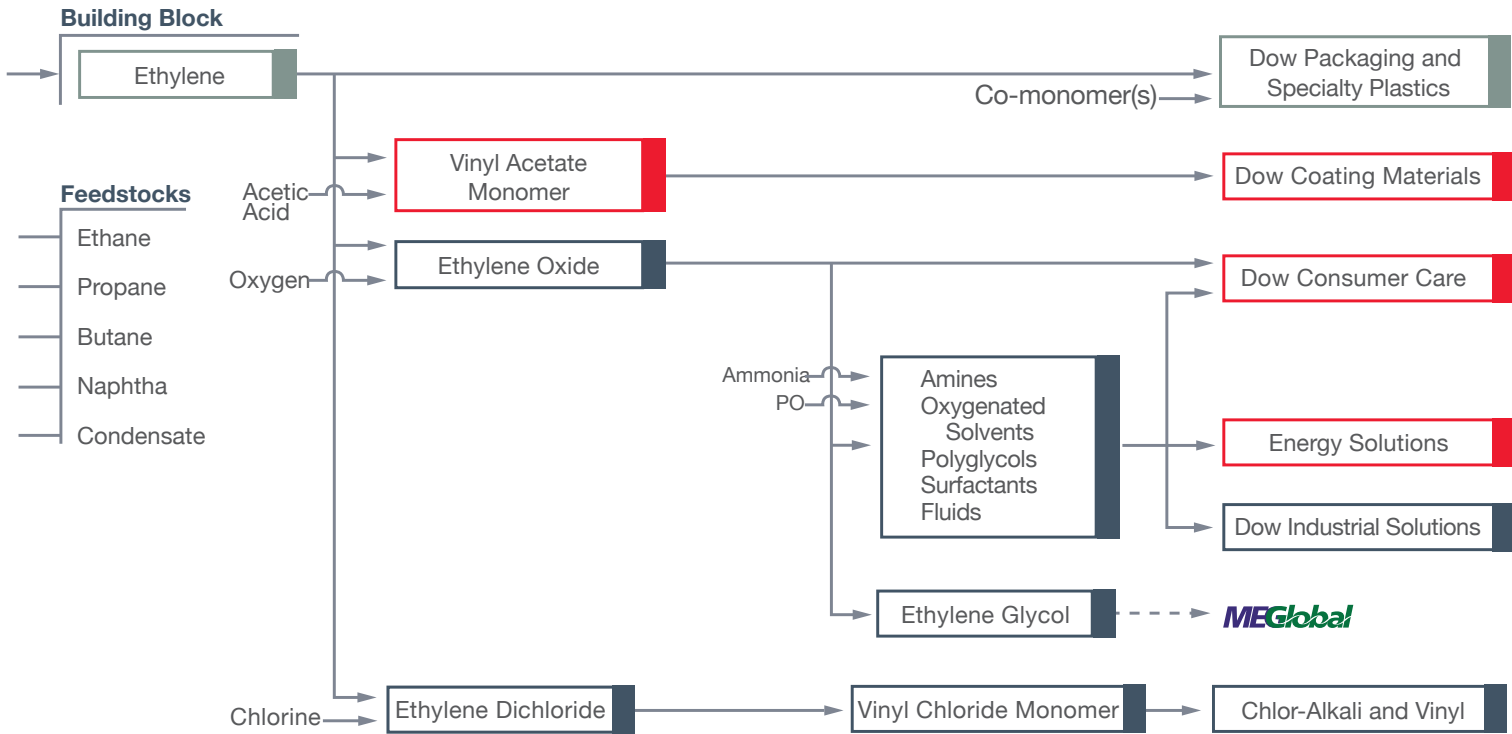
- Process parameter adjustments to improve yield
- Increased frequency of tracking and internal reporting of specific materials use
- Raw material quality improvements that result in more efficient use
- Waste minimization through equipment reliability improvements

The Company does not measure quantities of recycled input materials, or reclaimed products and their packaging materials at the corporate level. However, there are a number of metrics and activities that lead to progress on circular economy opportunities.

Dow measures our business units’ progress on sustainable chemistry as part of the Delivering Breakthrough Innovations Goal using the Sustainable Chemistry Index (SCI). The SCI is an internal metric that asks each business to report in four areas: product risk, addressing world challenges, business strategy and recognition, and value chain sustainability (see page 56 for more detail). There are questions that ask the business to estimate the amount of their raw material inputs that are recycled, and the amount of their sold products that are recycled at the end of their life. In 2018, businesses reported small percentages for both questions. Circular economy opportunities vary depending on chemistry and application, but through the SCI, each business is challenged to consider engagement in the circular economy and increase both the use of recycled input and the recovery of products at the end of their life.



Ethylene Value Chain Overview

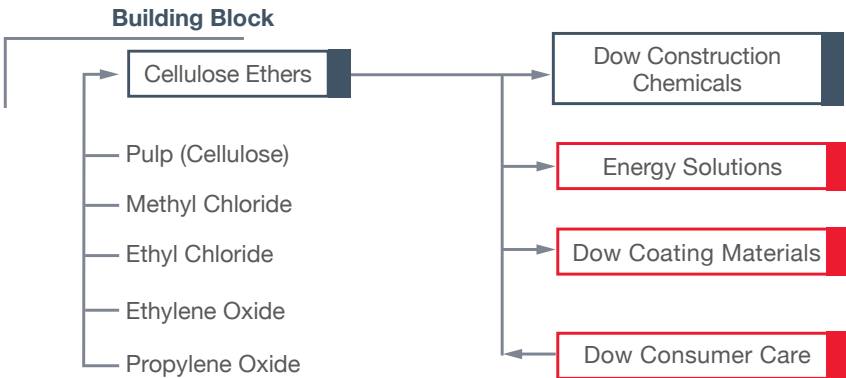


- Packaging & Specialty Plastics
- Industrial Intermediates & Infrastructure
- Performance Materials & Coatings

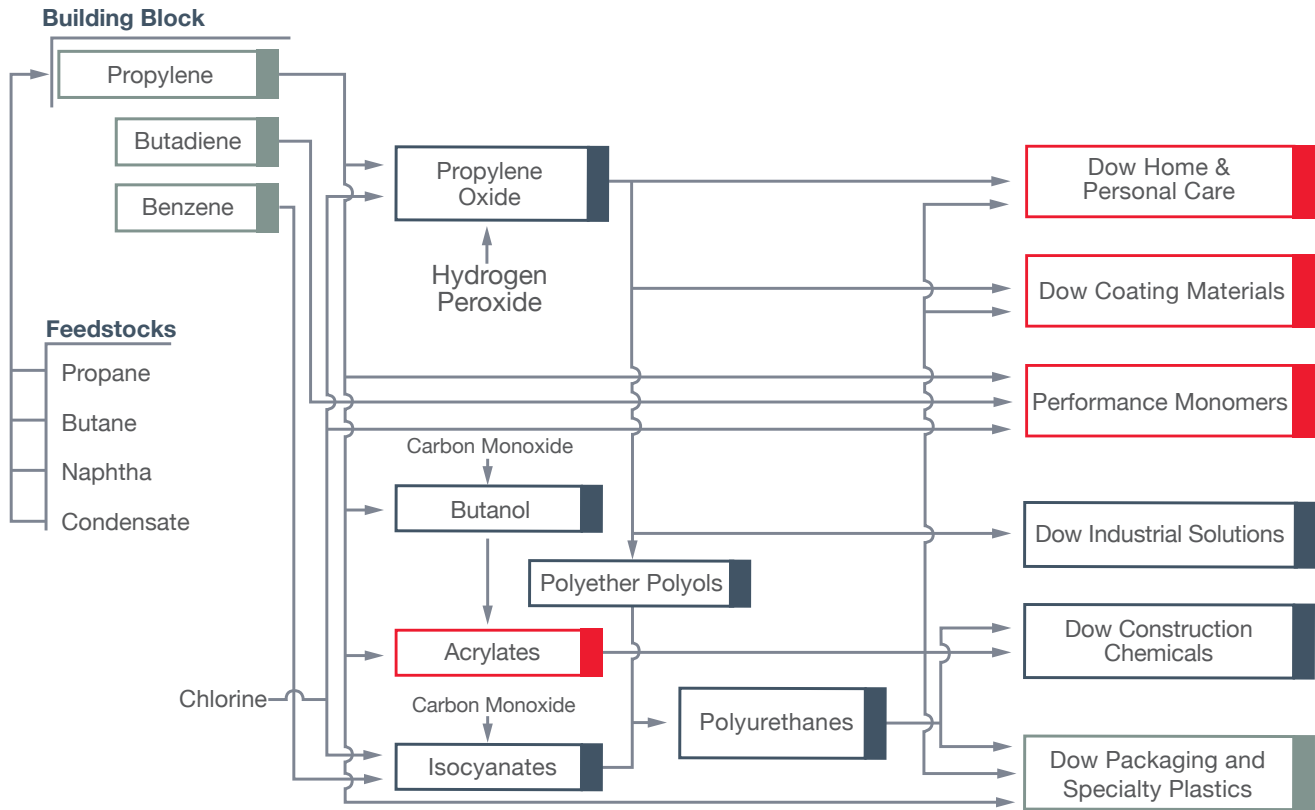
— Solid arrows represent how basic chemicals feed Dow's value-adding chains

- - - Dotted lines represent certain joint ventures or divested businesses

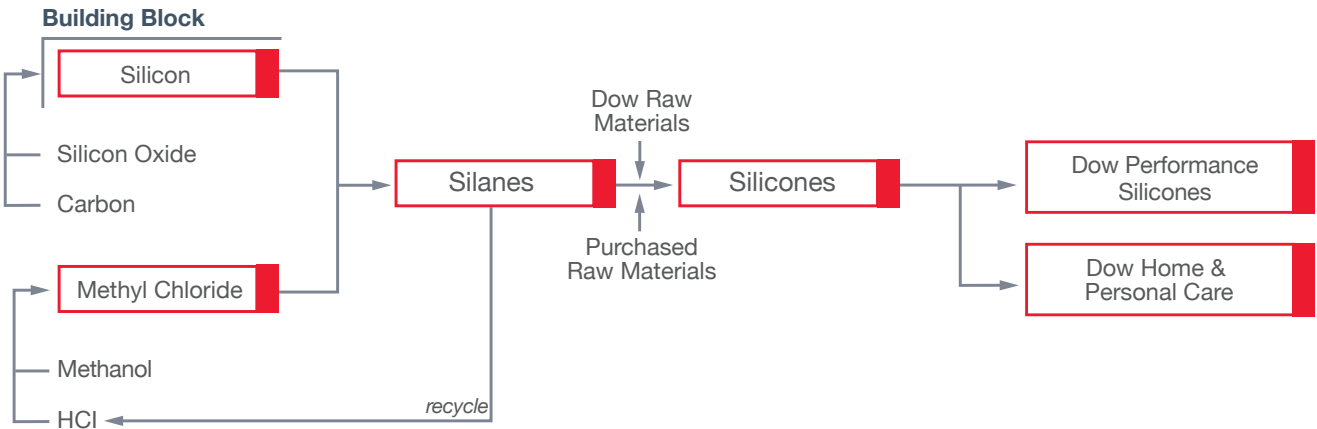
Cellulosics Value Chain



Propylene Value Chain Overview



Silicon Value Chain





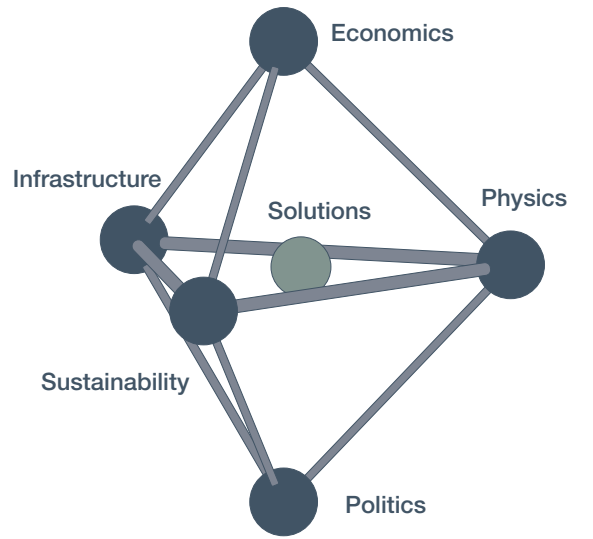
Energy Management Approach

Dow’s Hydrocarbons & Energy business manages a portfolio of power and steam production assets as well as fuel and power purchases. Most of the power and steam consumed for operation of our manufacturing processes comes from combined heat and power (CHP) plants. The CHPs provide power and steam to production facilities at 20 to 40 percent less fuel than conventional power generation while also reducing GHGs.

The Hydrocarbons & Energy business goal is to operate Dow’s energy assets with manufacturing excellence and safety-creating value from our assets and commercial relationships managing the power, steam and industrial gas exposure for Dow. Dow’s energy business is led by a global Energy & Climate Change director. Under the global director’s leadership, the regional directors and energy managers define the best integrated asset and commercial strategies for major sites and the company exposures. The Energy Tech Center supports the efforts to manage energy in the most effective way through energy efficiency projects within Dow’s sites.

The 2025 Sustainability Goal for the Energy business is to procure 750 MW from clean energy capacity for Dow’s operations. Dow purchases renewable energy in Europe, Latin America and North America. Because the economics for renewables vary, we have wind, solar, hydro, biomass and land fill gas, depending on the location. All of our projects are selected based on the lowest long-term cost of power or steam from available alternatives. We currently have contracts for 698 MW of clean energy and we continue to pursue clean energy opportunities where the resources (wind, solar, hydro and biomass) are available and the requirements of Dow can be met using these resources.

At Dow the strategic approach to energy management is with solutions that address the key five areas: 1) sustainability (environmental impact), 2) societal demands – including political realities, 3) chemistry and physics (what is possible with existing technologies until we innovate better ones), 4) reliability, including infrastructure limitations and grid design, and 5) affordability.



Energy Consumption Within the Organization GRI 302-1

Source	Million GJ
Purchased Natural Gas	344
Off Gas from Feedstock	229
Purchased Electricity	120
Power Sold	28
Net Purchased Power	92
Purchased Steam	29
Net Use	693

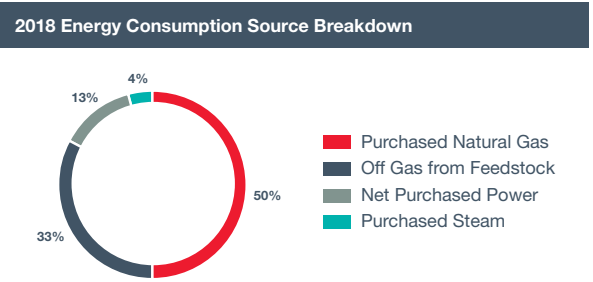
Purchased electricity includes renewable sources

Fuel Source	Capacity (MW)	Consumption (Million GJ)
Wind	353	4.3
Hydro	81	2.6
Biomass	261	4.2
Landfill Gas	3	0
Solar	0.6	0
Total	698	11.1



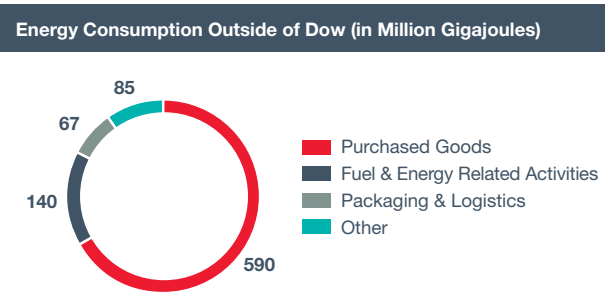
Renewable Energy

In North America, our renewable energy for Dow comes primarily from wind energy. We have a power purchase agreement, which helped to create a new wind farm in West and South Texas to meet the demands of our renewable energy request.



Energy Consumption Outside of the Organization GRI 302-2

Energy consumption outside of the Company occurs throughout the upstream and downstream activities associated with our operations. The results are summarized in the figure below. In past years, energy consumption outside the organization was calculated along with Scope 3 GHG emissions using an Economic Input Output (EIO) method, specifically the eiolca.net tool from Carnegie Mellon Green Design Institute and the 2002 producer cost models. Since 2017, we have updated our calculation methods for Scope 3 GHG to include primary company data for more accurate estimates (see discussion of disclosure GRI 305-3). We have not yet extended that more rigorous calculation to the energy outside of the organization estimate. The values reported for 2018 are simply scaled by Company revenue from the 2017 values.



Energy Intensity GRI 302-3

In 2018, our energy intensity was 4,625 Btu/lb. This represents total energy, power, steam, compressed air, cooling water pumps and other equipment used by manufacturing facilities. Energy intensity has remained relatively flat since 2005.

Reduction of Energy Consumption GRI 302-4

Dow does not track all energy-efficiency improvements throughout the Company. Many improvements come as an ancillary benefit of other capital projects. For example, if a pump fails and is replaced, rather than replacing it with the same pump and driver, a higher-efficiency pump and driver may be chosen. Insulation is upgraded, replaced and repaired regularly.

A good illustration of this happens at our site in Saint Charles. A project was implemented to use the hydrogen, which is a by-product of the ethylene cracker, as a fuel in the site’s gas turbines. This project helps us save 1,953,480 MMBtu/Yr. and have 114,376 tons of CO<sub>2</sub>e less greenhouse gases.

Greenhouse Gas Emissions

Management Approach for Greenhouse Gas Emissions

Dow manages the reporting and cost of emissions with the joint objectives of minimizing the cost of emissions and maximizing the profitability of the company over the long term. There are two types of work performed to achieve these objectives.

- The Hydrocarbons & Energy business, led by a global business director and through regional directors and their organizations, both purchases and trades any required allowances



for these emissions, and considers the cost of carbon in the production and acquisition of steam and power for the Company. This includes developing long-term projections of the cost of carbon at each of our production locations globally.

- In addition, the global carbon management director and team are responsible for developing an optimized list of projects to reduce carbon emissions and to increase efficiency; and to ensure the present and future cost of carbon is included in all capital investment and maintenance decisions.

Dow tracks progress in reducing emissions through three specific goals as part of our 2025 Sustainability Goals:

- Dow will obtain 750 MW of its power demand from renewable sources by 2025.
- Though we will grow globally over the next 10 years, Dow’s absolute greenhouse gas emissions will not exceed our 2006 baseline.
- Dow will grow, but offset emissions of, priority compounds, volatile organic compounds (VOCs), and nitrogen oxides (NOx).

We are on track to meet all three goals. We have long-term contracts to procure clean energy in the U.S., Latin America and Europe. Approximately 9.5 percent of purchased electricity is from renewable sources. Similarly, our new plants have significantly improved efficiency allowing us to increase sales significantly with stable emissions.

**Greenhouse Gas Emissions GRI 305-1, 305-2**

Dow’s target is to maintain absolute GHG emissions below the 2006 baseline as we continue to grow globally over the 10-year period

of the 2025 Sustainability Goals. Greenhouse gases are accounted for in accordance with the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard and using emission factors from the IPCC Fourth Assessment Report. Historic data take into account any divestitures, mergers, and acquisitions and may change to reflect those activities.

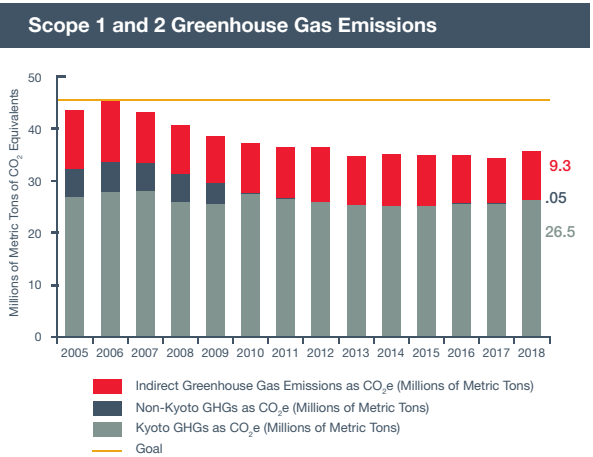
Significant sources of Scope 1 emissions are the combustion of fuel to operate CHP plants, boilers, furnaces, flares and all combustion behind our fence.

Greenhouse gases identified for phase-out by the Montreal Protocol have historically been included in the Company’s Scope 1 emissions total. As Dow has eliminated the use of these ozone-depleting materials, the associated greenhouse gas emissions have been reduced to nearly zero since 2010. More recently, our Scope 1 emissions have remained flat as increases in production from new facilities associated with our USGC Gulfstream investments (i.e., new PDH, cracker and derivative units) have been largely offset by reductions elsewhere.

Scope 2 emissions reflect power purchases to supply manufacturing operations around the world. These are calculated according to the Greenhouse Gas Protocol Scope 2 Guidance, including both location-based and market-based methods. The Scope 2 emissions included in the corporate total tracked for the 2025 Sustainability Goal are calculated using the market-based method. This allows purchased and contracted renewable energy to contribute to Scope 2 emissions reduction toward the goal of not exceeding our 2006 absolute emissions baseline. Scope 2 emissions for 2018 increased by 515,000 MT CO<sub>2</sub>e over what was reported

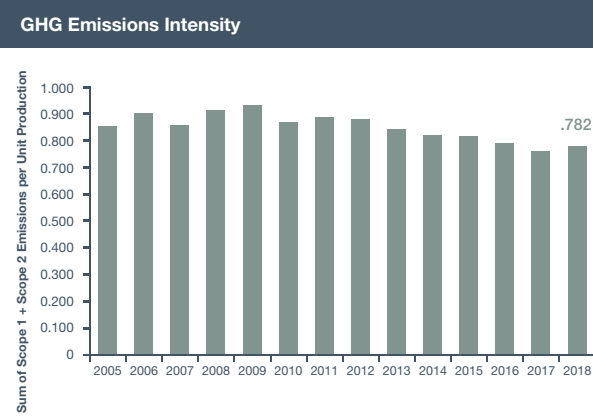
in 2017. The net increase is largely the result of updating emission factors and the application of contract-based factors at some of our large sites, specifically in Germany. The Scope 2 emissions calculated using the location-based method as defined by the Greenhouse Gas Protocol Scope 2 Guidance are 7.6 million metric tons of CO<sub>2</sub>e.

Currently we have 698 MW of renewable sources contracts toward a target of 750 MW. In Texas we have wind farm PPAs for 350 MW capacity. At Dow’s headquarters in Michigan we use power from landfill gas. We also have hydropower in Brazil and Sweden. Dow has biomass-based steam in Brazil. Dow is actively looking into energy-efficiency projects, new technologies and more renewable energy contracts to reduce Scope 2 emissions. These reductions of Scope 2 emissions have been essentially offset by increases associated with growth in production volume since the start of the 2025 Sustainability Goal period. The increase shown for 2018 was primarily attributed to changes made in site-specific emission factor changes.



**GHG Emissions Intensity GRI 305-4**

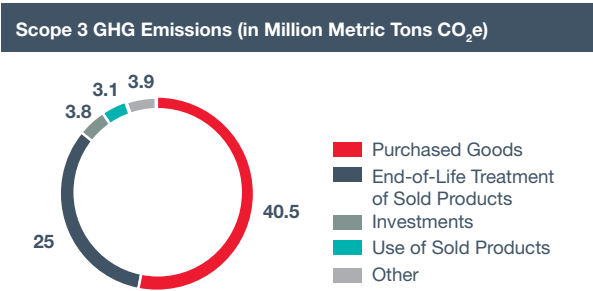
Total GHG Intensity is the sum of direct and indirect emissions (Scope 1 + Scope 2) per pound of production.



**Other Indirect (Scope 3) Emissions GRI 305-3**

Other indirect (Scope 3) GHG emissions occur from sources not owned or controlled by Dow. We have assessed all Scope 3 categories according to the GHG Protocol Corporate Accounting and Reporting Standard provided by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). The results are summarized in the Scope 3 chart. For 2017 reporting, we transitioned from a calculation method based on economic factors to a methodology utilizing actual data and engineering mass-balance calculations combined with emissions factors for mass-based operations from Ecoinvent v3 life cycle inventory datasets. This more rigorous calculation method gave us a more accurate estimate of Scope 3 GHG emissions, although the actual Scope 3 GHG emissions with respect to each category could still vary significantly. We did not update the Scope 3 calculations for 2018, understanding that the changes were likely to be small and

the overall conclusion that our emissions are dominated by the production of purchased goods and the end-of-life treatment of sold products. The values reported here are simply increased by the percentage increase in total production from 2017 to 2018. We intend to re-assess Scope 3 emissions in the coming year to account for changes associated with reorganization of the business and spin into new Dow.



**Reduction of GHG Emissions GRI 305-5**

Since 2006, Dow’s combined Scope 1 and Scope 2 emissions have been reduced by 9.6 million metric tons (see chart above). The largest portion of this reduction occurred prior to 2010, when Dow discontinued the use of a high-GHG-potential and high ozone-depleting-potential blowing agent (classified as a non-Kyoto gas) in the production of foam products. Since then, GHG emissions have remained relatively flat, with reductions due to improved efficiencies offset by volume growth and on track to meet our 2025 Sustainability Goal target. The difference in combined Scope 1 and Scope 2 emissions from 2017 to 2018 is an increase of 1.5 million metric tons (the reasons for this are described above).

Avoided emissions resulting from the use of Dow products are estimated as one of the targets for the Delivering Breakthrough Innovations 2025 Sustainability Goal. Our target is to achieve three

times the greenhouse gas benefit in use than the burden of producing it. We assess product families for the carbon benefit achieved through use of the Dow product versus an incumbent alternative. The burden of production is approximated as the sum of Scope 1 and 2 greenhouse gas emissions for the Company. We are still in the process of calculating this metric for all of the Dow portfolio, but the current estimate of the ratio of the carbon benefit of our products to the burden of producing them is greater than five. The largest of these benefits come from three product families:

- **Building insulation products.** This application accounts for the GHG emissions saved by reduced need to burn fuels to heat or cool buildings as a result of the insulation product being installed. The calculation assumes a 50-year installed life and takes credit for the full lifetime savings in the year of sale.
- **Products that enable light-weighting of vehicles.** Dow polyolefin products are used in both external and internal vehicle parts. In this benefit calculation, we have taken credit for parts that replace only external steel parts.
- **Plastic packaging.** The calculation of the carbon benefits of plastic packaging products was based on the method defined in a report prepared for the American Chemistry Council (ACC) and the Canadian Plastics Industry Association (CPIA) by Franklin Associates.

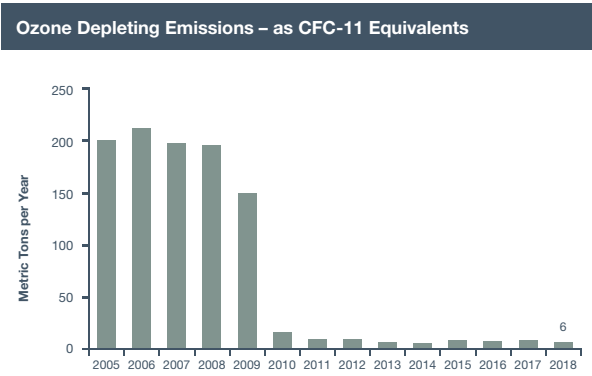
The detailed results of the individual application calculations are proprietary; the aggregate ratio result only is reported externally.



Air Emissions

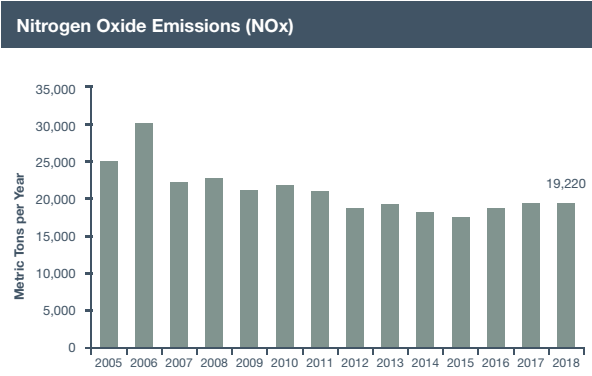
Ozone-Depleting Substances GRI 305-6

Ozone-depleting emissions include substances with an ozone-depletion potential greater than zero that can deplete the stratospheric ozone layer. The emissions factors are based on the Montreal Protocol.

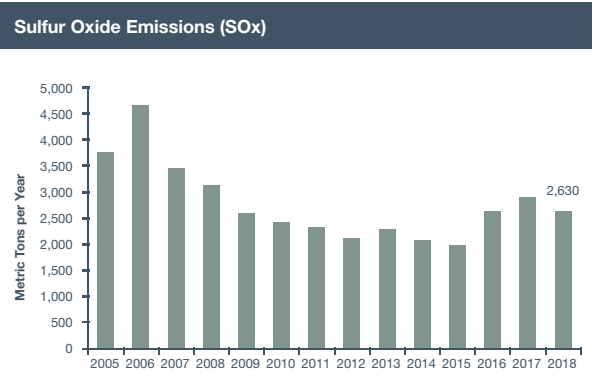


Ninety-seven percent of ozone-depleting emissions have been eliminated since 2005 as gases identified by the Montreal Protocol have been phased out.

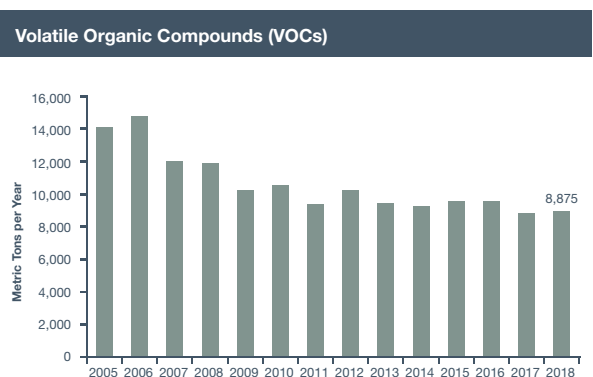
NOx, SOx and Other Significant Air Emissions GRI 305-7



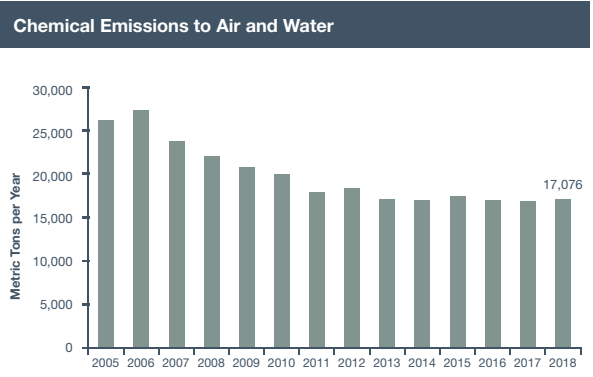
NOx emissions have reduced 23 percent since 2005 but have been relatively flat over the last five years.



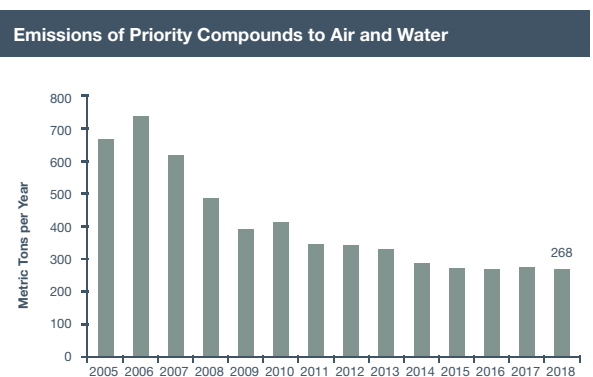
The SOx (sulfur oxides) total has decreased approximately 9 percent from 2017.



The volatile organic compounds total is down by 6 percent when compared to the 2015 baseline.



Chemical emissions are any release or discharge to the air or water of any pollutant from a facility. Chemical emissions exclude items such as NOx, SOx, CO, CO<sub>2</sub>, particulates, methane, hydrogen, nitrogen, oxygen, water, aluminum and certain salts. The chemical emissions total is down by 35 percent when compared to 2005.



Priority compounds are chemicals with persistent, bio-accumulative and toxic hazards, and chemicals with carcinogenic, mutagenic and reproductive hazards. The priority compounds total is relatively flat when compared to the 2015 baseline.

Water Use Across Dow Facilities

Though the total amount of water on this planet does not change, the nature of that water and its availability is changing. The amount of rain a specific location receives in a given time span, the direction of the water flows and the ability of the land to store that water for future use determines the amount of usable water available.

Clean and sufficient water is a critical resource for society and for Dow’s operations. The global challenge of protecting this supply is addressed through a broad range of activities by the Company – from business offerings that enable water treatment for millions of people globally, to operations that have been working to improve the efficiency of water use for decades, to external partnerships improving water quality and availability around the globe.

This section focuses primarily on the water footprint of our global operations. It also highlights examples of where we leverage solutions from our own portfolio of business offerings and partner with others to improve sustainable water management.

Sustainable Water Management

Developing sustainable water management practices is critical to our business. Establishing a long-term vision for water is also a key part of our water management strategy and is reflected in the connection to water in several of our 2025 Dow Sustainability Goals.

Dow 2025 Goal	Alignment with Water Strategy
Leading the Blueprint	Blueprint for Sustainable Watershed Management
Enabling a Circular Economy	Water recycle projects at Dow manufacturing sites
Valuing Nature	Projects that deliver value for Dow and for ecosystems
World-Leading Operations Performance	Goal to reduce freshwater intake intensity by 20% at key water-stressed sites

The Company has identified six of our manufacturing sites as key water-stressed sites. These sites are designated based on a number of factors: their location in a water-stressed watershed; water quality; competition among users of the same watershed; local knowledge of watershed challenges at the site; and long-term projections. Water supply issues are evolving and not isolated to water-stressed sites. Dow also keeps track of sites that are under a “watch list” where water challenges may occur.

The Global Environmental Technology Center is also actively pursuing opportunities around the use of engineered natural technologies, defined as engineered systems that use or mimic natural processes to provide clean water, clean air and healthy soil while affording benefits to the triple bottom line. The Company’s experience with this type of technology offering in support of sustainable water management has been very positive both from a cost perspective and ability to solve multiple issues. The Seadrift Constructed Treatment Wetlands built back in 1995 is one example where the benefits provided are still accruing. Dow has been monitoring the wetlands extensively since Hurricane Harvey to document the recovery of the asset to full operational status while also affording protection to the upstream assets. After a planned burn to remove the impacted vegetation, the treatment wetlands were able to return to full operation in less than two weeks, achieving full compliance with all permitted parameters as before the storm.



Dow Location	Source
Seadrift, Texas	Guadalupe River
Bahía Blanca, Argentina	Purchased freshwater
Terneuzen, The Netherlands	Rivers Rhine and Meuse
Tarragona, Spain	Purchased freshwater supply, source is Ebro River diversion
Dow Central Germany	River Saale (Schkopau site), River Weisse Elster and Lake Witznitz (Böhlen site)
Freeport, Texas	Brazos River



Water Stewardship in Action **GRI 306-5, 303-1**

Among the sites there are two that withdraw river water near sensitive wetlands areas listed in the Ramsar wetlands database. The Terneuzen site in The Netherlands withdraws fresh river water for cooling from the Biesbosch area, near the confluence of the Rhine and Meuse rivers, which is also the location of a Ramsar wetland (#197). The site withdraws less than 0.007 percent of the combined flow from the Rhine and Meuse rivers, which empty into the Biesbosch wetlands. Die Biesbosch is one of the largest national parks in The Netherlands and an area of extensive freshwater wetlands. Biesbosch is rich in biodiversity as described further at the Ramsar site. The Dow Terneuzen site has made steady progress in the past decade to decrease the long-term dependence on Biesbosch water by increasing the volume of recycled water. Last year’s effort continued with the negotiation of Dow’s new contract for water supply with Evides Industriewater. The contract involves a joint research agreement piloting novel technologies allowing Dow Terneuzen to operate solely on reclaimed and reused water by 2024. It includes the revamp of part of the current water treatment facility and the building of a grassroots facility to enable the supply of both demineralized water and high-quality cooling tower make-up water. The new treatment train would be comprised of a wetlands allowing for recovery of various internal and external sources of water followed by novel desalination treatment.

Dow Terneuzen received a grant from the Dutch TKI innovation fund to conduct a study for subsurface freshwater storage. The feasibility study is being executed with Deltares ([www.deltares.nl](http://www.deltares.nl)), an institute famous for its

technical knowledge and expertise in coastal areas; it began in September 2018 and concludes in June 2019. The objective is to define suitable areas that will allow collection and storage of excess rain and surface water (during the winter season) to abstract for use during drought periods, when availability of freshwater is scarce. To cover Dow’s possible freshwater shortage during summer periods, the total desired storage volume will be up to 1 million m³. As the study is embedded in a regional program, other end users such as local farmers may benefit from this possible opportunity.

The Terneuzen site discharges treated wastewater into the protected area of Westerschelde and Saeftinge, which is assigned as a Natura 2000 area (Ramsar #748). This large natural area covers the entire estuary of the River Scheldestretching, stretching 60 kilometers from the border with Belgium to the North Sea. It is a saltwater/brackish area with multiple wetlands and mudflats on its banks that support migratory fish, birds and other wildlife. The Terneuzen site nature permit allows for the discharge from municipal wastewater reuse to the river and estuary.

The Dow Tarragona site withdraws water for cooling and other operations needs from the Ebro River in Spain. The flow that it takes is less than 0.05 percent of the annual flow of the river. Further downstream at the coast the delta is part of Terres de l’Ebre, Catalonia, a UNESCO designated biosphere and also a Ramsar site (#593). The delta and associated wetlands support numerous species of water birds and other wildlife. The site has diminished its intake from the Ebro River, with projects that include water recycle. Overall the site has increased its

amount of recycle water by 13 percent since 2015. The site reclaims municipal water from two nearby cities and purifies it at the Camp de Tarragona Advanced Water Reclamation Plant. The reused water is used for make-up cooling tower water, freeing up this water for other uses. This water supplies up to 40 percent of Dow’s needs at one of our facilities and additional piping is being installed to expand recycled water use to another nearby Dow facility. This has increased the number of cycles on the water from four to seven and decreased the freshwater intake from the Ebro River, relieving (in a water-stressed region) stress and leaving supply for other uses and nature. In addition, “every drop counts” is the mindset by which Dow’s Freeport Texas Operations recently started to recycle clean water from the river water settling ponds, the equivalent of 1 percent of its annual consumption.

These examples of reducing the potential for impact on natural areas by recycling a portion of the water used at the plant are part of a broader emphasis on reducing water stress and improving resilience in water-stressed areas in the water stewardship program. At the key water-stressed sites, recycling and reuse have been emphasized to reduce the water footprint and the freshwater recycle and reuse rate is about 20 percent. Since Dow has been working on this endeavor for many years, innovative approaches need to be investigated to further progress.

Water Withdrawals **GRI 303-3**

Water is used for a variety of purposes in Dow production facilities across the globe. Surface water withdrawals are 65 percent freshwater and 35 percent seawater/brackish. In locations where sea/brackish water is readily available, such as

at production facilities at the coast, it is used for cooling. This accounts for the high proportion of seawater/brackish water in some locations. The majority of the freshwater intake is used for cooling and most of it is evaporated in cooling towers, returning the water to the environment. Rainwater is recovered in multiple locations and reused for firewater and other purposes, but its volume compared to other intakes is relatively small.

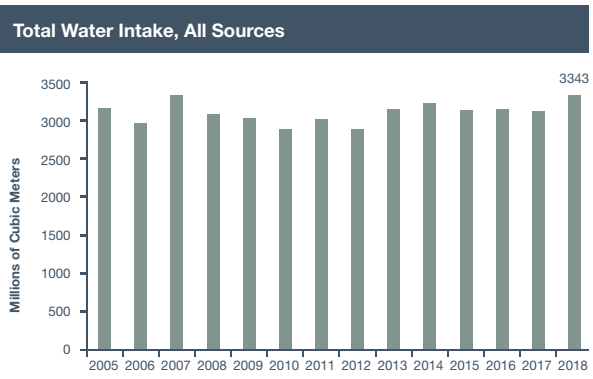
Only a small proportion of the water intake ends up in product (e.g., consumption). Past assessment of water use in the sites with the highest freshwater intake showed that more than 85 percent of the source water was returned within the watershed at equal or better quality than at withdrawal.

The total volume of water intake globally has been



Dow’s Freeport site recycles the equivalent of 1 percent of consumption via river solids settling ponds.

relatively consistent as a result of the combined impact of process efficiencies, business portfolio changes, and growth.



Freshwater withdrawals breakdown by source.

Freshwater Withdrawals, Millions of Metric Tons		
	Total all sites	Water-stressed sites
Groundwater	43	0.6
Purchased water	99	29
Surface water	2,013	164
Net Use	2,155	194

Freshwater intake intensity is tracked for the six defined water stressed sites described above. In 2018 the freshwater intake intensity at these sites was 10.3, a reduction of 13 percent from the 2015 baseline toward the 2025 goal of 20 percent reduction. The progress made this year includes:

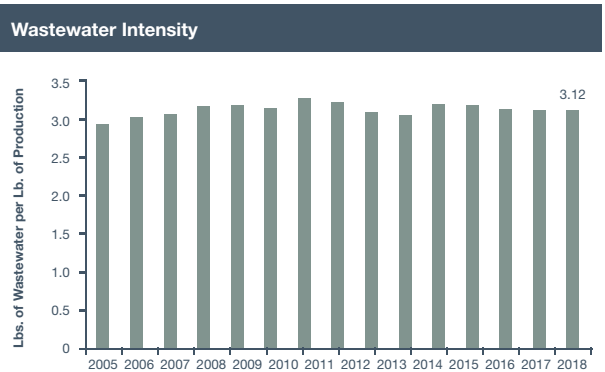
- Improved water recycling capabilities in Freeport
- Improved water treatment in Bahía Blanca, allowing for higher concentration cycles within the cooling tower and reduction in cleaning of exchangers
- Improved water quality management in Terneuzen

- Installation of higher efficiency manufacturing assets in the Gulf Coast

Water Discharges **GRI 306-1 (2016)**

Once the water has been used in Dow facilities, it is typically treated at a wastewater treatment plant and discharged. The total volume of wastewater discharged in 2018 was 143 million metric tons. The majority of the water is discharged as surface water, with a small portion returned to oceans. At a few sites Dow site wastewater goes to a third party for treatment before discharge (typically to surface water).

Wastewater intensity is the ratio of pounds of wastewater per pound of production. Over many years the wastewater intensity has been relatively consistent – around three pounds of wastewater discharged per pound of product.

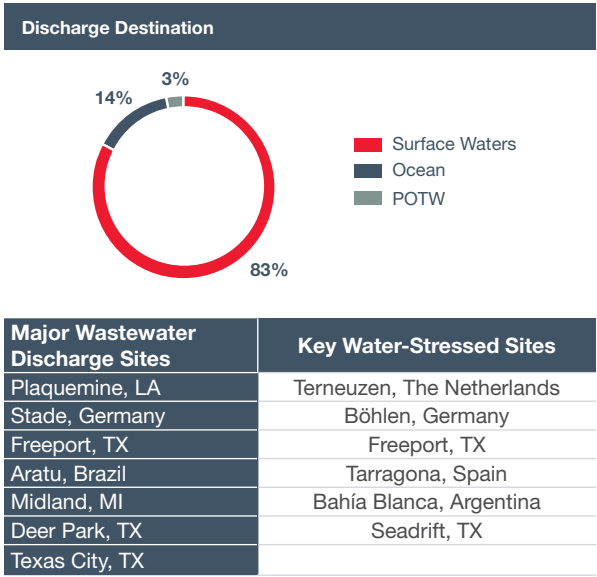


**GRI 303-2** Wastewater quality is strictly governed by local regulations and parameters are set specifically for each watershed. Dow’s operations abide by these local regulations. Therefore, wastewater discharge quality is not reported consistently across all Dow sites. Total Suspended Solids (TSS) and Biochemical Oxygen Demand (BOD) are reported for the sites listed below, which account for over 85 percent of Dow’s wastewater



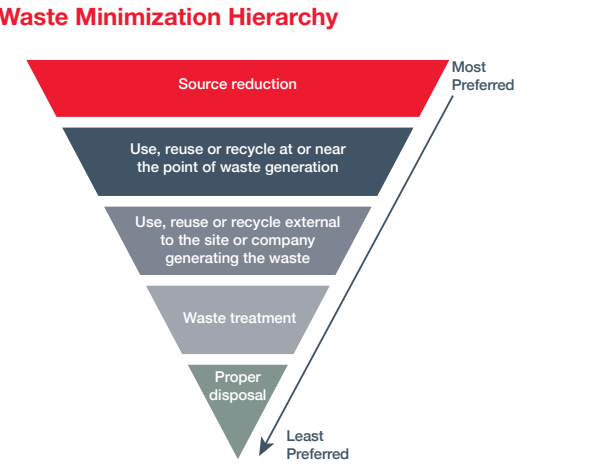
discharge. The seven major wastewater discharge sites were identified to establish the baseline for the 2015 Sustainability Goals and account for more than 80 percent of the total. The six key water-stressed sites were added to the wastewater discharge quality reporting with the inclusion of the 2025 Sustainability Goal to reduce freshwater intake intensity at key water-stressed sites by 20 percent.

The TSS discharge concentration across the sites has been relatively consistent (2016 TSS = 0.005 percent and the BOC concentration was 0.004 percent).

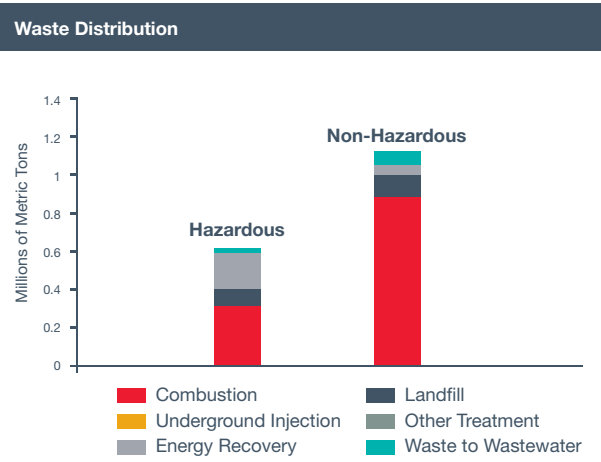


Waste

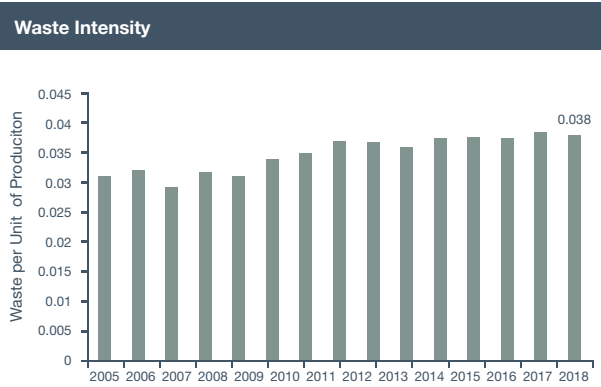
Dow’s EH&S policy and standards encourage waste minimization, which includes current efforts to reduce waste generation in our manufacturing units and also elimination of waste in product R&D and process design. Our strategy is guided by a waste minimization hierarchy.



**GRI 306-2** Total waste disposed of in 2018 was 1.8 million metric tons, a small increase over 2017. The increase was a result partly of construction waste disposal from significant capital projects.



Waste intensity has remained relatively flat for several years.

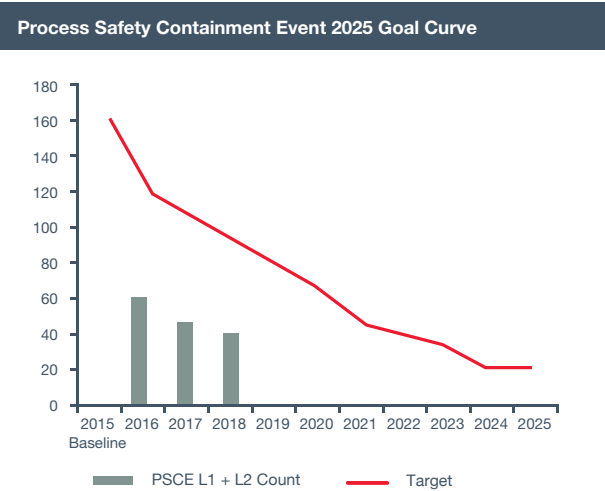


Significant Spills **GRI 306-3**

Beginning in 2016, the Company began using a new metric, Process Safety Containment Event (PSCE), in place of our previous Process Safety Incident (PSI) and Loss of Primary Containment (LOPC) metrics. Our PSCE metric is derived from an industry best practice, API RP-754. As an industry leader in sustainability performance, Dow has been heavily involved in the development of this metric. We believe aligning to this measure will help us achieve an even higher level of performance related to the containment and control of the materials we handle and produce.

Similar to the approach we are now taking with Injury and Illness measurement, our new PSCE metric focuses on both incidents that have the greatest impact, as well as incidents with the greatest potential for significant impact, including process damage, interruption or possible impact on our surrounding communities. The Company has defined levels 1 – 4, with Level 1 incidents having the highest actual or potential impact. By 2025, the Company’s goal is to reduce the number of Level 1 and Level 2 events by more than 80 percent from our 2015 baseline. In 2018 the Company achieved a 5 percent performance improvement over the prior year in significant process safety events. Our Safe Conditions team focused on risk elimination or reduction with several sub-projects, capital or organizational, around the world. This team allocates dedicated corporate capital funds on high-priority safety projects. In 2018, we had 147 personal safety

improvement projects across all regions where Dow operates. Main targets are reducing risk and addressing gaps versus Dow’s Life Critical standards and worker exposure guidelines. The total amount for 2018 represents the highest actual annual spend level since the high-priority program was established in 2014. This program provides funding in addition to our business capital allocation process.



Collaborating to Advance Safety

As part of our efforts to advance safe materials for a sustainable planet, we are working with the Chinese government to help advance environmental quality. In 2018, we signed a memorandum of understanding with China’s State Key Laboratory of Environmental Criteria and Risk Assessment to collaborate for scientific research, policy counsel and technical service in the fields of environmental criteria and standards and ecological protection. The aim is to help build a solid scientific and technological foundation to boost China’s environmental quality and further develop the country’s environmental quality standards. We want to help improve the quality of the environment in China by working together to find a balance between economic growth and social progress. In doing that, we hope to create an ecological civilization built upon a more sustainable, circular and low-carbon growth.



Supply Chain **GRI 102-9**

Integrated Supply Chain Overview

Dow’s Integrated Supply Chain recognizes the importance of safe, secure and responsible operations throughout our value chain. With this in mind, we have included sustainability as one of the four key tenets of our overall Integrated Supply Chain Strategy and work to drive improvements in sustainability with all of our partners from the sourcing of raw materials, through the storage and transportation of our intermediates and products, to our customers. With operations across the globe, supply chain sustainability is critical to our success, and core to Dow and the customer experience.

In 2017, Dow launched our Supply Chain Sustainability Strategy. This strategy clarifies how Integrated Supply Chain operations can impact Dow’s 2025 Sustainability Goals, helping us to achieve long-term business success while protecting people and the planet. Throughout 2018, Dow continued putting our strategy into action: We advanced our Green Transportation Strategy, working in collaboration with our carriers, customers and other key partners; executed our Transportation Stewardship Program; achieved external recognition for our approach to end-to-end transparency within the value chain; and invested in a state-of-the-art innovation facility to drive advancements in technology and digitalization.



Partnering Through the Value Chain

Our supply chain success depends on partnerships throughout our end-to-end value chain with all of our stakeholders, from suppliers and logistics service providers to customers. By collaborating across our value chains, including participating in third-party platforms like EcoVadis, and engaging in partnerships with suppliers and customers, we can drive sustainable business practices while improving supply chain capability and transparency.

CASE STUDY: Dow Achieves “Gold” Rating on External Platform for Fifth Consecutive Year

At Dow we recognize the importance of transparency throughout our entire value chain, and it is through our collaboration with our customers and third-party platforms that we

continue to drive long-term business success and improve our supply chain capability.



consecutive year in 2018, reaffirming the Company’s global citizenship commitment to supply chain transparency and sustainability excellence.

“Gold” is the highest rating awarded by EcoVadis. The EcoVadis platform delivers reliable scorecards to monitor supplier practices covering 190 purchasing categories, 150+ countries and 21 corporate social responsibility indicators. The scorecards are intended to be shared with purchasers who want to assure the integrity of their suppliers. With Dow’s EcoVadis rankings, our customers can be assured of our commitment to driving responsible and sustainable end-to-end value chains. Dow is in the top 8th percentile in the category of “Manufacturer of Base Chemicals, Fertilizers and Nitrogen Compounds, Plastics and Synthetic Rubber in primary forms” and in the top 7th percentile of more than 50,000 suppliers assessed by EcoVadis.

Dow demonstrated a comprehensive corporate

social responsibility management system that covered the following four themes:

- Environmental
- Labor Practices & Human Rights
- Fair Business Practices
- Sustainable Procurement

We are proud of our commitment to environmentally friendly and socially responsible operations, as well as our accomplishments in transportation safety and security. We recognize the importance of safe and secure transportation and have taken a number of steps to engage internally and externally to make a positive long-term impact. This approach has helped us to achieve business success while continuing to protect the communities within which we operate.

CASE STUDY: Dow Receives Responsible Care Waste Minimization Award from the American Chemistry Council

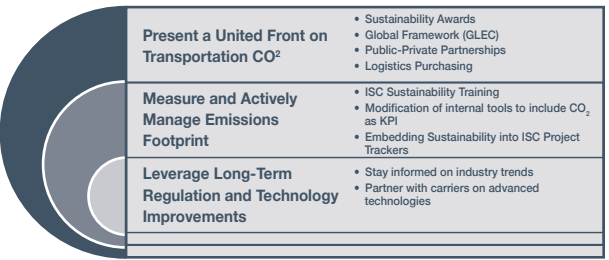
The American Chemistry Council (ACC) awarded Dow with a Responsible Care Waste Minimization Award in 2018. The Waste Minimization, Reuse and Recycling Award Program provides members and Responsible Care Partner companies an opportunity to share their achievements in the areas of waste minimization, reuse and recycling.

Dow was recognized for a propylene barge vent recovery and reconditioning project under the category of waste minimization. The Dow propylene barge fleet is used to transfer material from Freeport, Texas, to Plaquemine and St. Charles, Louisiana, locations for consumption. Upon startup, an issue was identified that these barges couldn’t be re-loaded once emptied due to excess pressure. Business plans were to flare these barges in a shipyard. The St. Charles Operations Site Logistics team determined we

could recover propylene by venting down and recapturing the propylene versus sending to a shipyard to flare off excess pressure into the atmosphere. It was soon realized the barges could also be reconditioned via the same method to avoid “reconditioning” them when offloaded using fuel gas. Within the first 16 months of current operations, the Dow St. Charles site has recovered over 545,000 pounds of propylene for reprocessing that would have otherwise been flared into the atmosphere. This project has also eliminated over 11,000 lbs. of flare tip emissions that would have resulted from the flaring of these barges.

CASE STUDY: Green Transportation

In 2016, Dow partnered with the University of Michigan’s Tauber Institute for Global Operations to develop a green transportation initiative for our global supply chain. The collaboration resulted in an actionable strategy for Dow, consisting of internal activities to actively manage and reduce our impact, as well as external engagement to drive and promote sustainable logistics.



In 2018, Dow continued implementation of the green transportation strategy through numerous improvements in measuring and managing our transportation carbon footprint. A significant milestone was Dow becoming the first chemical company to join the Global Logistics Emissions Council (GLEC). GLEC is a group of companies, industry associations and programs that want to

make carbon accounting work for industry. Their mission is to establish and implement a universal and transparent framework, utilizing existing best practices, to calculate logistics emissions. A framework on how to calculate logistics emissions will help industry drive emission reduction and enhance efficiency across global supply chains.

There are a number of different ways Dow is advancing this strategy. For many years, Dow has been implementing cost-saving and carbon-reduction projects, such as payload optimizations and modal shift changes, but we are now placing a new lens on this approach. Below are just a couple of examples from 2018 that highlight the efforts that have been initiated across Dow’s global supply chain to reduce our transportation carbon footprint.

Dow works on internal initiatives to streamline operations so they have the least impact on the environment and communities where we operate, thus multimodal transportation is a widely used alternative. In 2018, Dow made investments to install a new storage tank and loading platform for polyol at the Dow Aratu site in Brazil, allowing Dow to move from road transportation to multimodal (bulk marine + road) and serve customers located far from the manufacturing plant (> 1,900 km). As a result, the GHG emissions for this lane are reduced by 53 percent, which represents 1,360MT of CO<sub>2</sub> equivalents per year compared to the baseline scenario utilizing only road transport.

Also in 2018, Dow made an important investment in Europe to transfer material previously being shipped via road to being transported via pipeline. The material was being shipped in bulk to a nearby plant which would then package the material. The pipeline eliminates the use of 37,000 shuttles for this lane, which had been transporting the material via road. This change has reduced GHG emissions by an estimated 430MT of CO<sub>2</sub> equivalents per

>2,000

LOGISTICS SERVICE PROVIDERS IN >50 COUNTRIES

>500

WAREHOUSES AND >130 TERMINALS

100B

POUNDS/YEAR TO 100,000 SITES

6,000

SHIPMENTS PER DAY

2ND

LARGEST CHEMICAL RAIL FLEET GLOBALLY

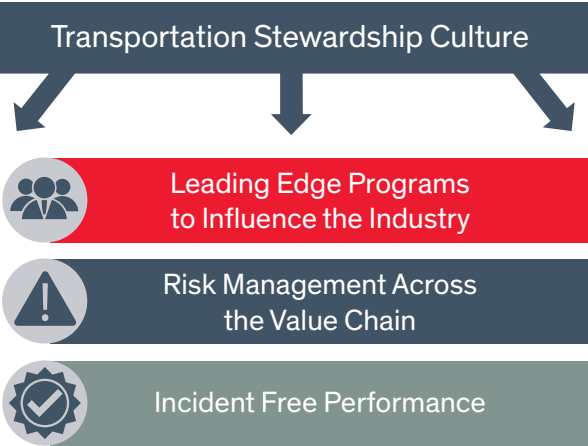
These Integrated Supply Chain metrics represent an approximation of Dow’s 2018 Integrated Supply Chain, based on 2017 data. A comprehensive update of these values will be made in 2019 to reflect the scope of the new Dow.



year when compared to the baseline scenario utilizing road transport.

World-Leading Transportation Stewardship and Performance

Dow’s Transportation Stewardship Program is an extensive, holistic program focused on driving the industry toward a new standard of transportation safety and security. Dow achieved a number of milestones in 2018 by implementing several initiatives that support our commitment to strengthen transportation safety to reduce risk to people and the planet.



**CASE STUDY: SMART Containers**

One of the objectives of Transportation Stewardship is to work in partnership with external providers to put in place actions that can be used to reduce transportation incidents across the industry. One activity Dow is working in collaboration on is to implement the use of SMART containers for applications where temperature monitoring during transportation is critical. This technology allows for the position and temperature monitoring data to be made available to the Logistics Service Provider (LSP).

When the material gets to a temperature before an action needs to occur, a notification is sent to alert the provider to take action. In the past, drivers would stop and perform a manual check of the temperature in the container at a certain frequency. This new technology allows for near real-time measurement of temperature so that adequate risk mitigations can occur, before there is an incident, or even a safety concern. This emerging technology can be leveraged across industry and will result in better performance overall for temperature-sensitive products.

CASE STUDY: Reducing Risk of Product Mis-Delivery

As a Responsible Care® Member Company, Dow is constantly working to improve transportation safety not only for our shipments, but across the industry. At Dow, we recognized an opportunity to develop an improved, standardized industry “excellent practice” to ensure that the correct material is delivered to the correct customer location 100 percent of the time. Dow took a leadership role, working with other shippers and with transportation companies to develop a program encouraging all parties involved in shipping, transporting and receiving chemicals to take specific actions to ensure that every shipment arrives at the intended destination.

- The program includes steps such as:
- Performing risk evaluations of operations
  - Conducting internal assessments of employee adherence to operating procedures
  - Maintaining training and evaluating its effectiveness
  - Sustaining effective information management and communication systems

The American Chemistry Council (ACC) is publishing this approach as an Excellent Practice, to be leveraged to all ACC member companies and across the industry. We are proud to work with our partners in industry to improve transportation safety and security across the supply chain.

CASE STUDY: S4TAR Program

With a kick-off in China in 2011, the Dow S4TAR program has since expanded to Japan, Southeast Asia, Korea, Australia and India. It has been highly recognized in the chemical logistics industry across the region for many years, known as a great platform for best-practice sharing, partnership cultivation, operation excellence recognition and sustainability advocacy. Due to the success of this program, Dow is leveraging it globally in 2019.

The Dow S4TAR award is designed to encourage sustainable excellence of Dow supply chain partners. Dow S4TAR program is a sustainable program with performance standards in the area of safety, sustainability, social responsibility and service.

Through quarterly and annual evaluation, the S4TAR award presents Best Carrier; Best Warehouse; Best Freight Forwarding and Best Terminal Logistics Service Provider at the end of each year. S4TAR continuously raises the bar year over year to maintain the highest standards in the industry. We hope to achieve operation and sustainability excellence by sharing best practices with our supply chain partners.



CASE STUDY: Emerging Geographies – Managing Supply Chain Risk

India continues to be one of the fastest-growing economies in the world and, although it is rapidly transitioning to the developed nation category, the logistics sector requires a significant improvement in terms of infrastructure, policy and technological transformation.

As stated in Dow's 2017 Sustainability Report, Dow identified a number of challenges relating to the transportation of chemicals in India and in response, set about creating a strategy to build safe and sustainable logistics operations to overcome these challenges. The team in India has continued to work on initiatives to ensure greater transparency, visibility of shipments, and emergency-response support through the implementation of Nicer Globe (a Responsible Care® initiative by the Indian Chemical Council), as well as utilizing technology to streamline procedures and improve efficiency around paperless vehicle inspections, and centralized data accessibility.

In 2018, Dow adopted technology to manage safe driving behavior through a sensor-enabled assessment of the following driving risks:

- Sharp turns, sudden brakes, tailgating encounters and split-second reactions of drivers
- Accounting of Indian traffic patterns and uneven Indian roads
- Transferring real-time data for proper control
- Presenting analytics in a visually understandable way

Breakthrough Innovations in Supply Chain Design

The key to revolutionizing the supply chain is investing in exploratory solutions that make big step changes, while seamlessly integrating those solutions with our traditional way of improving our processes and operating models. At Dow, a key pillar of our Integrated Supply Chain Strategy is focused on our next-generation end-to-end supply chain capabilities. In order to support this pillar we need to explore, evaluate and experiment with new and innovative technologies that will help us transform, while continuing to provide stability and implement incremental solutions to meet the needs of today. We also need to provide our employees with the resources and tools to think outside of the box.

CASE STUDY: Digital Fulfillment Center Launch

In 2018 Dow invested in a Digital Fulfillment Center (DFC), a 6,000-square-foot state-of-the-art innovation facility, which was constructed on the corporate campus to educate, inspire, instigate and accelerate transformative change. The DFC is a community of industry experts across a diverse

range of backgrounds and disciplines poised to initiate transformative change and support customer-driven enhancements.

The DFC works with Integrated Supply Chain (ISC) functional and business teams to make significant, high-value changes to the way we do work and service our customers.

It is the local "ideation center" for global business management teams, and serves as the facilitator between ISC and other functions, academia, key technology partners, research groups and our value chain partners.







**CASE STUDY: Utilizing Technology to Advance Transportation Safety and Sustainability**

Dow is an industry-recognized leader when it comes to safety and sustainability. In order to maintain our leadership role in industry, Dow is utilizing technology in new ways to quantify and improve our safety and sustainability metrics. These tools and technologies will improve the customer experience through increased transparency and identification of improvement opportunities.

- **Road Site Safety & Optimization Tools:** Some of Dow's sites have hundreds of miles of roads and railroad tracks, which means traffic safety is not only a high priority but complex. Dow initiated a project focused on real-time tracking of carrier driver compliance, which monitors the driving performance of our carriers on Dow property. We are implementing a solution using GPS and geo-fencing technology to improve compliance to site traffic rules and help ensure the safety of drivers, employees and the surrounding communities. The Integrated Supply Chain Innovation and Site Logistics teams have also developed a new automated capability to analyze and optimize on-site traffic in order to prescribe optimal routes to reduce personnel safety risk and overall congestion. The use of these new real-time tracking and optimization capabilities continues to improve visibility and safety at Dow.
- **CO<sub>2</sub> Inclusion in Network Optimization:** Optimizing supply chains typically involves analyzing elements such as cost, service level and capacities. While Dow has calculated transportation carbon emissions within our supply chain for many years,

it has always been calculated in separate tools. Dow's new capability now includes transportation carbon emissions as an additional optimization element embedded directly into our supply chain models. This brings improved visibility to the environmental impact of our supply chain decisions and drives carbon reduction.

- **Carbon Footprint Tracker:** This dashboard was developed in order to track our transportation emissions as we generate them. It provides visibility and improves reporting capabilities. Businesses can use this detailed data to answer questions at numerous levels. The levels vary from a high-level total number of transportation carbon emissions generated by business to the transportation carbon emissions that we generate when we ship a specific product, in a specific mode of transport, to a particular customer.

**CASE STUDY: Virtual Reality Load Rack Operator Training Simulation**

The virtual reality training simulation for hopper railcar loading was created by a cross-functional team from Dow and a Michigan State University (MSU) Computer Science department capstone project team. The simulation focuses on training loaders on hopper railcar loading procedures at a high level of quality and safety.

**Cross-Functional Highlights:**

- Digital Fulfillment Center sponsored the project and coordinated work between MSU and the various Dow stakeholders.
- Loaders in Freeport Plant B Poly 4 area wore Augmented Reality headsets attached to safety helmets to video loading procedure for MSU students.

- The Digital Operations Center allowed Freeport personnel to test MSU development work on their VR system.
- Enterprise Architecture input was critical to success.

Building on this successful proof of concept, the next steps are evaluating where to apply this technology and how to scale up to use this training in Dow. The goal is to have two VR training simulations ready for a new group of Freeport employees starting in Q3 of 2019. This will be a foundational part of driving toward error-free and injury-free loading.



**Sustainable Packaging**

In 2018, Dow fully integrated the Universal Packaging Specification System (UPSS), an SAP module to manage packaging specifications, into various workflows for end-to-end work process connectivity. The resulting controlled packaging data is bringing new visibility to areas of opportunity that will improve the sustainability

profile of the industrial packaging systems that are common across all businesses and regions. Utilizing data such as materials of construction and tare weights at the packaging component level and cross referencing with other internal Dow reports, such as inventory management, provides a new level of transparency on Dow's packaging.

This visibility shows where current practices can be further leveraged across Dow, such as lightweighting films and steel drums, and where making changes will have the greatest impact, such as introducing Post-Consumer Recycled (PCR) content into our packaging components and systems. Opportunities are evaluated to ensure functional and performance requirements continue to be met, and changes across the entire value chain reduce environmental impacts. Life Cycle Assessments are used to help identify the most effective solutions and quantify the overall improvements.

Dow's Packaging Sustainability Council continues to align with the Dow 2025 Sustainability Goals and drive projects to increase closed loop systems and support circular economy development through packaging design. These effects are accelerated by the use of UPSS and the supporting work processes.

**CASE STUDY: Dow Performance Silicones Promotes a Circular Material Flow with Packaging Change**

It's estimated that airbags have saved over 28,000 lives in North America alone. Dow Performance Silicones recently partnered with the world leader in automobile airbags to develop a next-generation silicone airbag coating demonstrating superior performance, while consuming 35% less material. To keep pace with industry demand, coated airbag modules must be supplied to OEMs at increasingly higher rates. Dow's solution was to convert



delivery of material from drums to a reusable fleet of IBCs. Dow and our airbag partner collaborated with Snyder Industries to design a state-of-the-art, metal, pressurizable, returnable IBC, holding the equivalent of five drums with expansion capabilities. This packaging solution replaced the one-time consumption of more than 5,000 drums, liners, lids, stretch wrap and more than 1,000 pallets per year with a returnable tote system. There was also an increase in scrap recovery by making the packaging change, resulting in savings of greater than 40,000 kilograms of material per year. This project supports Dow's 2025 Goal of Advancing a Circular Economy as it is not only vital to the preservation and protection of our planet's natural resources, but also to the success of businesses at Dow.

Procurement

Suppliers

Dow works with a variety of suppliers ranging from raw material, Logistic Service Providers (LSPs) and labor service providers to capital equipment and MRO and corporate service providers. Dow has approximately 50,000 suppliers in our supply chain across approximately 130 countries, with a purchased managed spend of approximately \$27 billion. We have procurement centers around the world to establish effective relationships with global and local suppliers of goods and services. We work with our suppliers to pursue the principles of sustainability through Responsible Care®. This provides us with a stable supply of raw materials.

Supplier Diversity

Dow's Supplier Diversity initiative includes small businesses and diverse businesses identified as owned by persons who are minorities, women, veterans (including service-disabled), LGBTQ and disabled. We are committed to supplier diversity as an element of our global procurement strategy with a focus on accelerating spend with diverse suppliers and achieving top benchmark performance in Supplier Diversity by 2020. In 2018, Dow established an advisory council, enhanced metrics and reporting aligned to the Supplier Diversity value proposition. We reviewed the over \$2 billion in annual spend in the United States classified as small and diverse internally and found 100 percent more Certified Diverse by third parties than we were previously aware of. In support of our Tier II Supplier Diversity Strategy, we have provisions in our Supplier Code of Conduct and contract templates to set expectations with our suppliers as it relates to their role in Supplier Diversity. Dow will continue to measure, track and report our small and diverse business spend, which currently represents approximately 13 percent of total spend in the United States.

Supplier Code of Conduct

At Dow, we continue to engage new suppliers globally and communicate our expectations that all suppliers are compliant with regulations and Dow's values, through the Dow Code of Conduct. Dow continues to review and refresh the Supplier Code of Conduct regularly, completing a full analysis of our current standards and industry best practices to ensure that we're holding our suppliers to the highest standards regarding Human Rights and Environmental Health & Safety. In 2018, merger activity enabled Dow to complete an extensive review, benchmark and harmonization of our Supplier Code of Conduct, confirming alignment to industry best practices and standards. Our Code of Business Conduct for Suppliers is required in all new and existing supplier engagements. The requirements of the Code of Business Conduct are built into supplier contracts to ensure they are contractually enforceable. Dow reserves the right to audit supplier compliance at any time. In cases where we identify less-than-adequate supplier practices, we reserve the right to discontinue business with the supplier. Annually we've identified compliance issues resulting in the immediate cessation of business in less than 0.1 percent of our supplier base.

External Manufacturing

External Manufacturing (EM) refers to manufacturing services conducted by an outside party on Dow's behalf using Dow's intellectual property. All external manufacturing suppliers are managed through a robust, risk-based work process that begins at project conception and extends through the conclusion of the business agreement. This work process includes a screening of process risks, a supplier selection process in which an initial on-site Environment, Health & Safety (EH&S) assessment is conducted, and regular subsequent EH&S audits. Some of the criteria reviewed in these audits include the implementation of safety management systems and safe work practices, compliance with local regulations and permits, environmental and waste management practices, and incident history. EM contract agreements also specify that the manufacturer comply with Dow's Code of Business Conduct and the Fundamental EH&S Expectations for External Manufacturers. In 2018 Dow collaborated with more than 500 external manufacturers globally, spending over \$1 billion on a diverse portfolio of technologies.

Logistic Service Providers

Leveraging our approach to our suppliers and EM suppliers, we also set high standards for our Logistic Service Providers (LSPs) by having in place an extensive risk-based program in order to qualify providers, and established periodic follow-up assessments. These assessments include reviewing health and safety practices; labor practices; environmental compliance and security, and are conducted via work processes and external initiatives such as the Safety & Quality Assessment System (SQAS); Chemical Distribution Institute (CDI); Responsible Care® and Anti-Corruption Due Diligence (ACDD). We also operate a detailed Distribution Risk Review process to ensure risks are adequately mitigated.

We are committed to driving sustainable behavior throughout our entire value chain and set clear expectations for our suppliers including EM and LSPs to adhere to our commitment of environmental and socially responsible operations. Through our collaborative partnerships with our upstream and downstream stakeholders, we are able to implement sustainable business practices across our entire value chain.

CASE STUDY: Dow Is Proud to Partner with Kiran Group

Dow is a proud partner with Kiran Group, a terminal operator that has demonstrated leadership of transportation stewardship. Kiran Group is a liquid storage tank terminal based on the western coast of India at Kandla Port. Their terminal achieved an international landmark when they became the first terminal in India to be successfully assessed under Chemical Distribution Institute-Terminal (CDI-T). This terminal is also completely powered by renewable sources of energy! Dow is fortunate to partner with LSPs such as Kiran Group, who drive cultures and behaviors focused on safety and sustainability.



2018 Awards & Recognition

In 2018, we were recognized for our work culture, innovation and strides to create a sustainable future. Here is a sample of our 2018 awards:

America's most JUST Companies by <i>Forbes</i> and <i>JUST Capital</i>	2018 Top 50 Companies for Diversity from <i>DiversityInc.</i>	Six R&D 100 Awards from <i>R&amp;D Magazine</i>	Four 2018 Edison Awards for breakthrough technologies
DowDuPont named to FTSE4Good Index Series for strong environmental, social and governance practices	DowDuPont named to the Dow Jones Sustainability World Index by <i>S&amp;P Dow Jones Indices</i> and <i>RobecoSAM</i>	Leading Disability Employer by the National Organization on Disability	2018 "Best Place to Work" for LGBTQ+ equality by <i>Human Rights Campaign</i>

2018 certification as a Top Employer in Canada, China, Egypt, Germany, Ghana, India, Kenya, Mexico, The Netherlands, Nigeria, Russia, Saudi Arabia, South Africa, Sweden, Switzerland, United Arab Emirates, and the United States by Top Employers Institute





Governance

Delegating Authority GRI 102-19

Dow employs a systematic delegation of authority structure from the Dow Executive Leadership Team throughout the Company through a chain of command. Generally, this occurs from vice presidents to business directors, to leaders and then to specialists.

Role of Highest Governance Body in Setting Purpose, Values and Strategy GRI 102-26

Prior to the Separation of Dow from DowDuPont on April 1, 2019, and throughout the calendar year 2018, refer to disclosure GRI 102-26 on page 115 of the Dow 2017 Sustainability Report.

Effective April 1, 2019, with the Separation of Dow from DowDuPont, Jeff M. Fettig serves as non-employee executive chairman of the Dow Board, which oversees the management and stewardship of Dow, including periodic review and update of Dow’s strategy. The Board is responsible for broad corporate policy and overall performance of the Company through oversight of management and stewardship of the Company. The Board has responsibility for

overseeing the strategic planning process and annual review of the corporate and business plan. The Board delegates the day-to-day management of the Company to the Chief Executive Officer and other senior executives of the Company, and provides guidance to and oversight of management.

Remuneration Policies GRI 102-35

Remuneration Policies for the Highest Governance Body and Senior Executives

Objectives of Dow’s Executive Compensation Program

The objectives of Dow’s compensation program are to align executives’ compensation with Dow’s short-term and long-term financial and operational performance and to provide the compensation framework to attract, retain and motivate key executives who are critical to achieving Dow’s vision, strategy and longer-term success. The primary objectives of Dow’s executive compensation program are as follows:

- Support the achievement of Dow’s vision and strategy
- Motivate and reward executives when they deliver desired business results and stockholder value
- Attract and retain the most talented executives to succeed in today’s competitive marketplace
- Create an ownership alignment with stockholders

Pay Mix

2018 was a unique year, as both Dow and DuPont were merged as one company; however, the final intended business separations (“spin” of Dow) took place on April 1, 2019, and Corteva on June 1, 2019. Due to the relatively short period of time after the closing of the Merger, a decision was made to not develop separate executive compensation programs at the Dow level for 2018. Rather, the executive officers of DowDuPont continued to be employees of, and participants in, the compensation and benefit programs of Dow and DuPont, respectively. While the programs remained separate the financial targets in the annual incentive programs had components that were aligned across the entire DowDuPont entity.

The executive compensation programs deliver value through three primary forms of compensation: base salary, annual incentives and long-term incentives. The compensation outcomes under the programs’ annual and

long-term incentives are determined by the Company’s performance. Executive compensation is linked strongly to the financial and operational performance of the business. On average, approximately 90 percent of the CEO’s target annual total compensation is at risk, while more than 80 percent of the other Named Executive Officers’ compensation, on average, is at risk.

Performance Criteria

Consistent with our pay-for-performance philosophy, a significant portion of executive compensation consists of variable performance-based annual and long-term incentives. These incentive programs include a balanced set of metrics that include operating return on capital, relative total shareholder return, operating net income, management operating cash flow and an individual performance multiplier ranging from 0-125 percent of the annual incentive award. Environment, Health & Safety metrics are thoroughly embedded in the leadership expectations of Dow executives, and executives are held accountable for environment, health and safety objectives through the individual performance process, which therefore significantly impacts the annual cash incentive.

Executive Compensation Recovery (Clawback) Policy

As part of their overall Corporate Governance structures, both Dow and DuPont maintained Executive Compensation Recovery Policies for their executive officers. These policies allowed the respective companies to recover incentive income if an executive officer either knowingly engaged in or was grossly negligent in the event of circumstances that resulted in a financial restatement or other material non-compliance. Under the Dow Executive Compensation Recovery Policy, Dow may recover incentive income that was based on achievement of quantitative performance targets if an executive officer engaged in grossly negligent conduct or intentional misconduct that resulted in a financial restatement or in any increase in his or her incentive income. Incentive income includes income related to annual bonuses and long-term incentives.

Sign-On Bonuses or Recruitment Incentive Payments

Dow rarely uses sign-on bonuses or recruitment incentive payments during the recruitment of senior executives. If needed, such sign-on bonuses or recruitment incentive payments may be delivered in the form of either retention shares or cash in order to attract and retain the most talented executives to succeed in today’s competitive marketplace.



Potential Payments

Upon Termination or Change-in-Control, Dow follows local pay practices for severance payments excluding those impacted by legacy change-in-control agreements. While such legacy agreements remain in existence, the Board prohibits new or amended change-in-control agreements and no new agreements with Dow executives have been executed since 2007. To find details about potential payments upon termination or change-in-control, see the DowDuPont 2018 Proxy Statement from page 54 through 56.

Process for Determining Remuneration **GRI 102-36**

Compensation is a key component of Dow’s Employee Value Proposition (EVP). Dow has a variety of compensation programs to incentivize and reward employees’ contributions. There are two main components of compensation that all Dow employees receive: base pay and an annual variable program called the Performance Award. These components are reviewed for each employee annually through Dow’s Global Pay Planning (GPP) cycle. During the GPP cycle, annual base pay increase guidelines and Performance Award payout guidelines are created for each employee by Dow’s global compensation department. Supervisors make compensation decisions for their employees using these guidelines and assessing the employee’s overall contribution and goal completion, including performance on sustainability goals. All compensation decisions are reviewed by second-level leaders and ultimately functional leadership for equity and consistency.

The Compensation and Leadership Development Committee is responsible for the approval of the overall design of Dow’s annual Performance Award and Long-Term Incentive programs, and the metrics and goals that determine payout amounts. The Compensation and Leadership Development Committee has retained external compensation consultants, who report directly to the committee. The compensation consultants have multiple safeguards and procedures in place to maintain the independence of the consultants in their executive compensation consulting practice. These safeguards include a rigidly enforced Code, a policy against investing in client organizations and separation between their executive compensation consulting and their other administrative and consulting business units from a leadership, performance measurement and compensation perspective.

Annual Total Compensation Ratio **GRI 102-38**

As required by Section 953(b) of the Dodd-Frank Wall Street Reform and Consumer Protection Act, and Item 402(u) of Regulation S-K, Dow is providing the following information about the relationship of the annual total compensation of DowDuPont (other than our CEO) and the annual total compensation of DowDuPont CEO Edward D. Breen. For 2018:

- The annual total compensation for the median employee was \$75,018, and
- The annual total compensation of the CEO, as reported in the Summary Compensation Table was \$18,675,301.

Based upon the calculation of compensation for both the CEO and the median employee, DowDuPont estimated the ratio of CEO pay to median employee pay for 2018 was 249:1.

The pay ratio presented above is a reasonable estimate. Because SEC rules for identifying the median employee and calculating the pay ratio allow companies to use different methodologies, exemptions, estimates and assumptions, the pay ratio may not be comparable to the pay ratio reported by other companies.

In accordance with Instruction 2 to Item 402(u) of Regulation S-K, because there has been no change in our employee population or employee compensation arrangements in the past fiscal year that DowDuPont reasonably believed would significantly impact our pay ratio disclosure, DowDuPont elected to utilize the same median employee that we had identified in 2017 to calculate our 2018 CEO pay ratio. DowDuPont identified the median employee in 2017 from the population of all employees worldwide as of October 31, 2017, utilizing base pay and annual incentive at target – rather than Summary Compensation Table compensation. DowDuPont calculated annual base pay based on a reasonable estimate of hours worked during 2017 for hourly workers, and upon salary levels for the remaining employees. DowDuPont used a valid statistical sampling methodology to identify employees who DowDuPont expected to be paid within a .05 percent range of the median. DowDuPont selected an employee from that group as the median employee for purposes of preparing the ratio of CEO pay to median employee pay.

Percentage Increase In Annual Total Compensation Ratio **GRI 102-39**

Ratio of percentage increase in annual total compensation for the organization’s highest-paid individual in each country of significant operations to the median percentage increase in annual total compensation for all employees

Dow’s annual total compensation is evaluated on a role-specific basis. Each employee is paid on a market-competitive basis. In the interest of confidentiality and competitiveness, Dow does not report ratios based on individual compensation, or make pay decisions based on these ratios. See **GRI 102-36** for a full description of the process for determining remuneration at Dow.

Defined Benefit Plan Obligations and Other Retirement Plans **GRI 201-3**

Dow and DuPont did not merge their defined benefit pension plans and other post-retirement benefit plans as a result of the merger transaction.

Dow Defined Benefit Pension Plans

The Company has both funded and unfunded defined benefit pension plans that cover employees in the United States and a number of other countries. The U.S. qualified plan covering the parent company is the largest plan. Benefits for employees hired before January 1, 2008, are based on length of service and the employee’s three highest consecutive years of compensation. Employees hired after January 1, 2008, earn benefits that are based on a set percentage of annual pay plus interest.

The Company’s funding policy is to contribute to the plans when pension laws and/or economics either require or encourage funding. In 2018, the Company contributed \$1.656 billion to its pension plans, including contributions to fund benefit payments for its non-qualified pension plans. In the third quarter of 2018, the Company made a \$1.1 million discretionary contribution to its principal U.S. pension plan, which is included in the 2018 contribution amount above. The Company expects to contribute approximately \$240 million to its pension plans in 2019. Additional information about pension plans and other postretirement benefits can be found in the 2018 Dow Form 10-K.





Financial Assistance Received from Government **GRI 201-4**

Funding Program	Program Title	Government Support (\$MM) *
Belgium National	Fuels and Chemicals by fast pyrolysis of biomass	2.18
Canadian National	Innovative Transparent Barrier Multi-layer Sheets from Starch for Food Packaging	0.25
Dutch National	Lower olefins from Synthesis Gas using supported iron catalysts coping with the challenges of selectivity and stability	1.10
Dutch National	Energy-efficient valorization of components from process water streams	0.87
Dutch National	WATER NEXUS - securing water supply in delta and floodplain areas worldwide	7.50
Dutch National	Debottlenecking of Chromatographic Separations	0.94
Dutch National	Compact Conversion and Storage of thermal energy	2.41
Dutch National	Steam and Condensate Quality Water Process Technology	1.10
Dutch National	Development and demonstration of low-carbon technologies to transform CO <sub>2</sub> and CO streams from the steel industry into new value chains	7.00
Dutch National	Energy-efficient Affinity-driven Molecular Separation	0.66
Dutch National	Feasibility study subsurface fresh water storage in Braakman South region	0.66
Dutch National	Waste Heat recovery in industrial batch processes: analysis of combined heat storage and heat pump application	0.57
Dutch National	Sustainable steam production for industry	0.97
Dutch National	Electrically driven ThermoAcoustic high temperature STEam producing heat pump	0.55
Dutch National	Mechanical steam recompression	2.30
Dutch National	Cost Reduction Industrial Heat Pumps	0.48
Dutch National	Electrons to Close the Carbon Cycle	1.10
Dutch National	Heat-integrated Distillation enabling innovative ethylene crackers	0.97
Dutch National	Low CapEx industrial heat pump in paper industry	0.86
European Union	PU Disruptive technology to dramatically improve Energy Efficiency of Household Appliances	2.57
European Union	Compact Retrofit Advanced Thermal Energy storage	0.62
European Union	Integrale Mobiele Proceswater-OnderzoeksVoorziening voor een Economische Delta	2.62
European Union	Formulations & Computational Engineering	4.32
European Union	Advanced Composite Material Selection Platform with a Seamless Integration of Material Models and multidisciplinary Design framework	4.26
European Union	Compressed Natural Gas Transport System	13.20
European Union	Integrated Model guided process optimization of steam cracking furnaces	7.57
European Union	European Materials Modelling Council	4.34
European Union	Sustainable Production of Industrial Recovered Energy using energy dissipative and storage technologies	4.15
European Union	Lignin oxidation technology for versatile lignin dispersants	4.77
European Union	Materials Technologies for Performance Improvement of Cooling Systems in Power Plants	10.68
European Union	Impact of air pollutants on cutaneous responses in both healthy and compromised skin barrier, and innovative solutions to protect skin against urban pollution	0.91
European Union	Smart Tooling	2.02
European Union	Micro-Enhanced PV: Planar optical micro-tracking for high efficiency solar panels	0.14
German National	Modeling and optimization of transdermal therapeutic systems	0.34
State of Pennsylvania	High Resolution Mapping of Size and Surface Charge Distribution of Particle-Stabilized Colloids Used in Architectural Coatings	0.05

Funding Program	Program Title	Government Support (\$MM) *
Swedish National	Dry Pretreatment for quality assured multimaterial adhesive bonding	0.30
US-DOD	Integrated Scheduling and Control for Real-Time Optimization of Factory Operations	0.76
US-DOD	An Analytics Based Supply Chain Risk and Event Management Decisions Support Framework	0.50
US-DOD	Digital Manufacturing Roadshow	0.01
US-DOE	Novel Chemistry-Enabled Fast Processing of Carbon Fiber Composites for the Transportation Industry	2.80
US-DOE	Integrated Computation Materials Engineering Development of Carbon Fiber Composites for Lightweight Vehicles	5.98
US-DOE	Ambient pressure XPS for in situ studies of heterogeneous catalysts	0.31
US-DOE	Imaging Model Ziegler Natta Catalysts with Single-Atom Sensitivity	0.22
US-DOE	3D Structure and Organization in Polymeric and Organic Thin Films	0.22
US-DOE	Bio-Syngas fermentation for C6-C14 alcohol production as a pathway to fuels	1.99
US-DOE	Dynamic Intensification of the Operation of Dividing Wall Columnn	0.82
US-DOE	Energy-efficient separation of olefins and paraffins through a membrane	0.66
US-DOE	Formation of Rapid Center for Process Modeling	0.20
US-DOE	RAPID Multiscale Modeling Infrastructure	1.90
US-DOE	An experimentally verified physical properties database for absorbent selection	0.15
US-DOE	Optimization modeling for advanced syngas to olefin reactive systems	0.34
US-DOE	Efficient chemicals production via chemical looping	0.87
US-DOE	Polyurethane Modeling	0.30
US-NSF	I/UCRC for Light Conducting Materials	0.42
US-NSF	Selective C-H Borylation of Arenes and Heterocycles	0.40
US-NSF	Improved Association-based Models for Separations in the Bioeconomy	0.37
US-NSF	Population Balance Modeling - Fundamental Closures and Experimental Validation	0.30
US-NSF	Advancing Thermal Field-Flow Fractionation for Complex Polymers and Colloids	0.40

\* The dollar figure listed is the value of the direct government support for the total program. Several programs have multiple participants receiving assistance. These programs were active in 2018; however, many are multiyear.

Conflicts of Interest **GRI 102-25**

The Dow Board adopted a Code of Conduct for all employees, directors and officers (see disclosures 102-16 and 102-17 for more details) and a Code of Financial Ethics applicable to the chief executive officer and chief financial officer on April 1, 2019. The full text of Dow’s Code of Conduct and Code of Financial Ethics are available at <https://corporate.dow.com/en-us/about/codes-of-conduct>. Further, Dow discloses on its website any waiver of or amendment to the Code of Conduct requiring disclosure under applicable rules. For details of conflicts of interest governance as it existed prior to the Separation, refer to disclosures 102-25 on page 114 of the Dow 2017 Sustainability Report and at <http://www.dow-dupont.com/investors/default.aspx>.

All Dow directors, officers and employees are expected to be familiar with the Dow Code of Conduct, and to apply it in the daily performance of their responsibilities. The Dow Code of Conduct is intended to focus employees, officers and directors on our Values of Integrity and Respect for People, help them recognize and make informed decisions on ethical issues, assist in creating a culture of the highest ethical and business standards, and provide mechanisms to report unethical conduct.

The Dow Corporate Governance Committee has responsibility for reviewing issues involving director independence and related personal transactions using information obtained from directors’ responses to a questionnaire asking about their relationships with Dow, and those of their immediate family members



and primary business or charitable affiliations, and other potential conflicts of interest, as well as certain data collected by Dow related to transactions, relationships or arrangements between Dow on the one hand and a director, officer or immediate family member on the other. The process for onboarding new directors also includes an orientation process that includes guidance on how to fulfill their duties as a member of the Dow Board.

All Dow directors, officers and employees are required to complete an annual ethics and compliance certification, which includes questions concerning potential conflicts of interests. All responses are reviewed by the Office of Ethics & Compliance, and action is taken to appropriately mitigate risk where an actual or apparent conflict exists.

Other public company board memberships, supplier/purchaser relationships and related party disclosures are disclosed in the relevant SEC filings for Dow, including the proxy statement and the Forms 10-K and 10-Q as appropriate.

Effectiveness of Risk Management Processes **GRI 102-30**

Effective April 1, 2019, following the Separation, the Dow Board is responsible for overseeing the overall risk management process. Risk management is considered a strategic activity within Dow, and responsibility for managing risk rests with executive management while the committees of the Board and the Board as a whole participate in the oversight of the process. Specifically, the Board has responsibility for overseeing the strategic planning process and reviewing and monitoring management’s execution of the corporate and business plan, and each Standing Committee is responsible for oversight of specific risk areas relevant to their respective charters. This process includes an assessment of potential cyberattacks and the ongoing review of Dow’s comprehensive cybersecurity program.

Committee	Area(s) of risk management oversight responsibility
Audit Committee	Management and effectiveness of accounting, auditing, external reporting, compliance and internal controls and cybersecurity
Compensation and Leadership Development Committee	Executive compensation practices
Corporate Governance Committee	Director independence, potential conflicts of interest and other ethics and compliance
Environment, Health, Safety & Technology Committee	Emerging regulatory developments related to safety, health and environment

Although each Committee is responsible for overseeing the management of certain risks as described above, the full Board is regularly informed by the

Committees about these risks. This enables the Board and the Committees to coordinate risk oversight and the relationships among the various risks faced by Dow.

Prior to the Separation of Dow from DowDuPont on April 1, 2019, and throughout calendar year 2018, refer to disclosure 102-30 on page 115 of the Dow 2017 Sustainability Report.

Review of Economic, Environmental and Social Topics and Communicating Critical Concerns **GRI 102-31, 102-33**

The oversight responsibility of the Board and Committees is enabled by an enterprise risk management model and process implemented by management that is designed to identify, assess, manage and mitigate risks. The Audit Committee is responsible for overseeing that management implements and follows this risk management process and for coordinating the outcome of reviews by the other Committees in their respective risk areas. In addition, the enterprise risk management model and process are reviewed with the Board annually, and the Board recognizes that risk management and oversight comprise a dynamic and continuous process.

The strategic plan and critical issues and opportunities are presented annually to the Board by the CEO and senior management. Throughout the year, management reviews any critical issues and actual results compared to plan with the Board and relevant Standing Committees. Members of executive management are also available to discuss company strategy, plans, results and issues with the Standing Committees and the Board, and attend such meetings to provide periodic briefings and access. In addition, the Audit Committee regularly meets in executive sessions and holds separate executive sessions with the lead client service partner of the independent registered public accounting firm, internal auditor, general counsel and other management as appropriate.

During 2018, DowDuPont held seven Board meetings and 21 Committee meetings. All of the incumbent Directors attended more than 75 percent of the sum of the total number of Board meetings and the total number of meetings of the Committees on which the Director served during the past year, except one. The Directors are encouraged to attend all annual meetings of Stockholders, and in 2018 14 Directors then serving on the DowDuPont board attended the DowDuPont Annual Meeting of Stockholders held on April 25, 2018.

Nature and Total Number of Critical Concerns **GRI 102-34**

The Business Risk Review (BRR) Work Process exists to help Dow employees identify, evaluate and manage EH&S risks, including risks associated with

possible failure of a product to perform as intended (i.e., product efficacy). Fundamental to the entire BRR Work Process is the recognition by someone in the organization that there is an activity or opportunity that potentially poses a risk to people or the environment and that is a candidate for a risk evaluation.

The Dow Sustainability Team has established a set of criteria for elevating selected activities and opportunities and their attendant EH&S and product efficacy risks for review. These criteria are not to be interpreted as defining what the Company considers to be acceptable or unacceptable levels of risk, but rather they are intended to define those activities or opportunities that carry levels of risk that the Sustainability Team wants to review and approve or reject. They are subject to modification and refinement based on experience with their use.

How Stakeholders’ Views Are Sought and Taken into Account Regarding Remuneration **GRI 102-37**

Throughout the year, the independent directors and members of the management teams at Dow conduct extensive outreach to stockholders, engaging with investors who collectively hold more than 50 percent of outstanding shares of the Company. Through this outreach, the management teams update investors on a range of topics such as the overall business strategy, current business conditions, corporate citizenship and sustainability, corporate governance practices and executive compensation, as well as gain an understanding of the perspectives and concerns of each investor. The Board and management teams carefully consider the feedback from these meetings, as well as stockholder support, when reviewing the business, corporate governance and executive compensation profiles.

External Initiatives **GRI 102-12**

Responsible Care Management System	Voluntary initiative of the global chemical industry, a requirement of membership in the American Chemistry Council.
United Nations Global Compact (UNGC)	Voluntary participant since 2007. Requires commitment to meet fundamental responsibilities and report progress in four areas: human rights, labor, environment and anti-corruption. Caring for Climate signatory.
Sustainable Packaging Coalition	Founding partner. Helped initiate a store drop-off program for hard-to-recycle plastics.
Trash Free Seas Alliance (TFSA)	Founding member of this voluntary, by-invitation alliance in 2012. The Alliance unites industry, science and conservation leaders who share a common goal for a healthy ocean free of trash. The Alliance provides a constructive forum focused on identifying opportunities for cross-sector solutions that drive action and foster innovation.
Keep America Beautiful (KAB)	Voluntary corporate partner. Greg Jozwiak, corporate vice president of Integrated Supply Chain, is a board member.
Ellen MacArthur Foundation (EMF)	Voluntary member of the Circular Economy 100 (CE100) since 2016. The CE100 network facilitates market making by providing collaborative and pre-competitive opportunities that bring together business, innovators, cities and governments, universities and thought leaders.
Operation Clean Sweep	Pledged partner in this initiative of the American Chemistry Council designed to prevent and help keep plastic out of the marine environment.
Alliance to End Plastic Waste (AEOW)	Founding member of organization with the goal to develop and scale solutions that manage plastic waste and promote post-use solutions of plastic.
Circulate Capital	Founding investor in effort to incubate and finance companies and infrastructure that prevent waste in oceans.

Restatements of Information **GRI 102-48**

Several non-material changes were made to environmental metrics reported for 2017. These can be seen by comparing the summary chart on page 83 with the corresponding chart on page 91 of the Dow 2017 Sustainability Report. The restatements are a result of correction of data reporting errors discovered after publication of the 2017 report.

Changes in Reporting **GRI 102-49**

The DowDuPont Merger and subsequent Separation are explained in detail on page 5. The scope of disclosures, particularly those related to governance, is not strictly The Dow Chemical Company as it existed before the Separation. Clarification of differences in the scope of reporting are noted throughout the report as needed for clarity.



Independent Assurance Statement to The Dow Chemical Company GRI 102-56

The Dow Chemical Company (Dow) engaged ERM Certification and Verification Services (ERM CVS) to provide limited assurance in relation to the Dow 2018 Sustainability Report (the Report), as set out below.

	Engagement summary
Scope of our assurance engagement	Whether Dow has prepared the Report in accordance with the Global Reporting Initiative (GRI) Standards Comprehensive option. Whether Dow’s reported progress against its 2025 Sustainability Goals is fairly presented, in all material respects, in accordance with its internal reporting criteria.
Reporting criteria	Global Reporting Initiative (GRI) Standards (2016) except for GRI 403 (2018): Occupational Health and Safety and GRI 303 (2018): Water and Effluents. Dow Chemical 2025 Sustainability Goals.
Assurance standard	ERM CVS’ assurance methodology, based on the International Standard on Assurance Engagements ISAE 3000 (Revised).
Assurance level	Limited assurance.
Respective responsibilities	Dow is responsible for preparing the Report and for the collection and presentation of the information within it. ERM CVS’s responsibility is to provide conclusions on the agreed scope based on the assurance activities performed and exercising our professional judgment.

Our conclusions

Based on our activities, as described below:

- Nothing has come to our attention to indicate that the report has not been prepared in accordance with the Global Reporting Initiative (GRI) Standards Comprehensive option;
- Nothing has come to our attention to indicate that reported progress against Dow’s 2025 Sustainability Goals is not fairly presented, in all material respects, in accordance with internal reporting criteria.

Our assurance activities

A multi-disciplinary team of sustainability and assurance specialists performed the following assurance procedures:

- A visit to the head office of Dow in Midland, Michigan, to:
  - Interview management representatives in order to understand Dow’s sustainability strategy, policies and management systems for the relevant disclosures;
  - Interview 2025 Sustainability Goal project teams in order to understand the evolution and definition of the goals and the basis on which performance is determined;
  - Review internal reporting guidelines, including reporting databases as well as the associated conversion factors used;
  - Review the completeness of data reported by all the sites and the effectiveness of the internal review (QA/QC processes), including the consolidation process;

- Review performance during the reporting period against the 2025 Sustainability Goals; and
- Review a sample of qualitative and quantitative evidence supporting the reported information;
- Check consistency of financial data and other information with Dow’s 2018 10K report;
- Confirm the consistency of the reported information with our understanding of Dow’s business, operations, sustainability strategy and prior reporting;
- Review external media reporting relating to Dow to identify relevant sustainability issues in the reporting period; and
- Check the presentation of the information relevant to the scope of our work in the Report to ensure consistency with our findings.

The limitations of our engagement

The reliability of the assured data is subject to inherent uncertainties, given the available methods for determining, calculating or estimating the underlying information. We did not undertake source data verification at any operated facilities. It is important to understand our assurance conclusions in this context.

Our scope of work and activities relate to information presented in the Report for Dow in its operational structure as of 31 December 2018 and not relate to any information in the Report presented in relation to Dow operational structure post 1 April 2019.

Our independent assurance statement provides no assurance on statements in the Report regarding future performance or on whether Dow will achieve its stated goals.



Jennifer Iansen-Rogers  
Head of Corporate Assurance Services



12 June 2019

ERM Certification and Verification Services, London  
[www.ermcvsvs.com](http://www.ermcvsvs.com); email: [post@ermcvsvs.com](mailto:post@ermcvsvs.com)

ERM CVS is a member of the ERM Group. The work that ERM CVS conducts for clients is solely related to independent assurance activities and auditor training. Our processes are designed and implemented to ensure that the work we undertake with clients is free from bias and conflict of interest. ERM CVS and the ERM staff that have undertaken this engagement have provided no consultancy related services to Dow in any respect.



# GRI CONTENT INDEX

We prepared this report in accordance with the Global Reporting Initiative (GRI) Standards Comprehensive option. This Index of Content serves as a navigation tool for the GRI standards. **GRI 102-55**

GRI Standard/Disclosure		Page Number(s)/Location	Omission
1. Organizational Profile			
102-1	Name of the organization	9	
102-2	Activities, brands, products, and services	15	
102-3	Location of headquarters	9	
102-4	Location of operations	10	
102-5	Ownership and legal form	9	
102-6	Markets served	15	
102-7	Scale of the organization	11	
102-8	Information on employees and other workers	60, 63, 64	
102-9	Supply chain	96	
102-10	Significant changes to the organization and its supply chain	5	
102-11	Precautionary principle or approach	57	
102-12	External initiatives	111	
102-13	Membership of associations	50, 57	
2. Strategy			
102-14	Statement from key decision-maker	6	
102-15	Key impacts, risks, and opportunities	37	
3. Ethics and Integrity			
102-16	Values, principles, standards and norms of behavior	33	
102-17	Mechanisms for advice and concerns about ethics	33	
4. Governance			
102-18	Governance structure	The governance structure of the organization, effective April 1, 2019, including committee responsibility is described at <a href="https://investors.dow.com/en/corporate-governance/board-committees/default.aspx">https://investors.dow.com/en/corporate-governance/board-committees/default.aspx</a> . Governance structure as it existed for Dow as the Materials Science Division of DowDuPont in 2018, refer to disclosure 102-18 on page 113 of the Dow 2017 Sustainability Report.	
102-19	Delegating authority	104	

GRI Standard/Disclosure		Page Number(s)/Location	Omission
4. Governance			
102-20	Executive-level responsibility for economic, environmental and social topics	Mary Draves, corporate vice president and chief sustainability officer, is responsible for Environment, Health & Safety and leading the Company's commitment to Sustainability. Draves reports directly to Jim Fitterling, chief executive officer.	
102-21	Consulting stakeholders on economic, environmental and social topics	Effective April 1, 2019, refer to Dow Inc. Corporate Governance Guidelines, which can be found at: <a href="https://investors.dow.com/en/corporate-governance/board-committees/default.aspx">https://investors.dow.com/en/corporate-governance/board-committees/default.aspx</a> .	
102-22	Composition of the highest governance body and its committees	The composition of the Board and its Committees effective April 1, 2019, following the separation of Dow from DowDuPont can be found at: <a href="https://investors.dow.com/en/corporate-governance/board-of-directors/default.aspx">https://investors.dow.com/en/corporate-governance/board-of-directors/default.aspx</a> and <a href="https://investors.dow.com/en/corporate-governance/board-committees/default.aspx">https://investors.dow.com/en/corporate-governance/board-committees/default.aspx</a> . The composition of the Board and its committees through calendar year 2018 prior to the separation are described in disclosure 102-22 on page 113 of the Dow 2017 Sustainability Report.	
102-23	Chair of the highest governance body	From January 1 - March 31, 2018; Andrew Liveris served as executive chairman of the board of DowDuPont while Dow operated as the Materials Science Division of DowDuPont. April 1, 2018 - March 31, 2019: Jeff M. Fettig served as non-employee executive chairman of the board of DowDuPont while Dow operated as the Materials Science Division of DowDuPont. Effective April 1, 2019, Jeff M. Fettig serves as the non-employee executive chairman of the board of Dow.	
102-24	Nominating and selecting the highest governance body	Effective April 1, 2019, refer to Dow Inc. Corporate Governance Guidelines, which can be found at: <a href="https://investors.dow.com/en/corporate-governance/board-committees/default.aspx">https://investors.dow.com/en/corporate-governance/board-committees/default.aspx</a> .	
102-25	Conflicts of interest	109	
102-26	Role of highest governance body in setting purpose, values and strategy	104	
102-27	Collective knowledge of the highest governance body	Effective April 1, 2019, refer to the biographies of the Board of Directors at <a href="https://investors.dow.com/en/corporate-governance/board-of-directors/default.aspx">https://investors.dow.com/en/corporate-governance/board-of-directors/default.aspx</a> for the qualifications of the Dow Inc. Board of directors and the Dow Inc. Corporate Governance Guidelines at <a href="https://investors.dow.com/en/corporate-governance/board-committees/default.aspx">https://investors.dow.com/en/corporate-governance/board-committees/default.aspx</a> on page 5 under “Director Orientation and Continuing Education.” Prior to April 1, 2019, throughout the 2018 calendar refer to DowDuPont governance guidelines found at <a href="http://www.dow-dupont.com/investors/corporate-governance/default.aspx">http://www.dow-dupont.com/investors/corporate-governance/default.aspx</a> .	
102-28	Evaluating the highest governance body's performance	Effective April 1, 2019, refer to page 4 of the Dow Inc. Corporate Governance Guidelines at <a href="https://investors.dow.com/en/corporate-governance/board-committees/default.aspx">https://investors.dow.com/en/corporate-governance/board-committees/default.aspx</a> . Prior to April 1, 2019, throughout the 2018 calendar year, refer to disclosure 102-28 on page 115 of the Dow 2017 Sustainability Report.	
102-29	Identifying and managing economic, environmental and social impacts	37	
102-30	Effectiveness of risk-management processes	37, 107, 110	



GRI Standard/Disclosure		Page Number(s)/Location	Omission
102-31	Review of economic, environmental and social topics	110	
102-32	Highest governance body's role in sustainability reporting	4	
102-33	Communicating critical concerns	110	
102-34	Nature and total number of critical concerns	110	
102-35	Remuneration policies	105	
102-36	Process for determining remuneration	106	
102-37	Stakeholders' involvement in remuneration	111	
102-38	Annual total compensation ratio	106	Confidentiality constraints. In the interest of confidentiality and competitiveness, Dow does not report ratios based on individual compensation or make pay decisions based on these ratios.
102-39	Percentage increase in annual total compensation ratio	107	Confidentiality constraints. In the interest of confidentiality and competitiveness, Dow does not report ratios based on individual compensation or make pay decisions based on these ratios.
5. Stakeholder Engagement			
102-40	List of stakeholder groups	50	
102-41	Collective bargaining agreements	62	
102-42	Identifying and selecting stakeholders	50	
102-43	Approach to stakeholder engagement	50	
102-44	Key topics and concerns raised	50	
6. Reporting Practice			
102-45	Entities included in the consolidated financial statements	Subsidiaries of the Company, for which the effective ownership by Dow as the Materials Science Division of DowDuPont in 2018, is 50 percent or more are listed in the Dow 2018 10-K (Item 1, page 9). Subsidiaries of Dow, effective April 1, 2019, are listed as Exhibit 21 of the Dow Form 10.	
102-46	Defining report content and topic boundaries	34	
102-47	List of material topics	36	
102-48	Restatements of information	111	
102-49	Changes in reporting	111	
102-50	Reporting period	4	
102-51	Date of most recent report	4	
102-52	Reporting cycle	4	
102-53	Contact point for questions regarding the report	4	
102-54	Claims of reporting in accordance with the GRI Standards	4	

GRI Standard/Disclosure		Page Number(s)/Location	Omission
102-55	GRI Content Index	114	
102-56	External assurance	112	
Economic Performance			
Management Approach		12	
201-1	Direct economic value generated and distributed	11	
201-2	Financial implications and other risks and opportunities due to climate change	44	
201-3	Defined benefit plan obligations and other retirement plans	107	
201-4	Financial assistance received from government	108	Confidentiality constraints. We disclosed grants information. However, tax related information for this disclosure is confidential in many instances as we have agreements with governments that include non-disclosure provisions.
Materials			
Management Approach		82	
301-1	Materials used by weight or volume	82	Not disclosed as aggregate quantity is impractical due to multiple purchasing arrangements and delivery mechanisms. We do report our raw material efficiency metric, which is more meaningful to us and drives more efficient material use.
301-2	Recycled input materials used	82	
301-3	Reclaimed products and their packaging materials	82	
Energy			
Management Approach		86	
302-1	Energy consumption within the organization	86	
302-2	Energy consumption outside of the organization	87	
302-3	Energy intensity	87	
302-4	Reduction of energy consumption	7	
302-5	Reductions in energy requirements of products and services		Not applicable. Virtually all Dow products do not require energy in use.
Water and Effluents			
Management Approach		91	
303-1	Interactions with water as a shared resource	92	
303-2	Management of water discharge-related impacts	93	
303-3	Water withdrawal	92	



GRI Standard/Disclosure		Page Number(s)/Location	Omission
303-4	Water discharge		Disclosed to GRI 306-1 (2016) as we transition to the new 303 water disclosure, which is required for reports published on or after Jan. 1, 2021. We expect to report fully to this disclosure next year.
303-5	Water consumption		Not disclosed as we transition to the new 303 water disclosure, which is required for reports published on or after Jan. 1, 2021. We expect to report fully to this disclosure next year.
Emissions			
Management Approach		87	
305-1	Direct (Scope 1) GHG emissions	88	
305-2	Energy indirect (Scope 2) GHG emissions	88	
305-3	Other indirect (Scope 3) GHG emissions	89	
305-4	GHG emissions intensity	89	
305-5	Reduction of GHG emissions	89	
305-6	Emissions of ozone-depleting substances (ODS)	90	
305-7	Nitrogen oxides (NOx), sulfur oxides (SOx) and other significant air emissions	90	
Effluents and Waste			
Management Approach		See above, water, and environmental	
306-1	Water discharge by quality and destination	93	
306-2	Waste by type and disposal method	95	
306-3	Significant spills	95	
306-4	Transport of hazardous waste		Information unavailable. We will be reviewing ways to address this disclosure on a yearly basis as we define the need to capture this information. See page 98 for discussion of our Transportation Safety Index.
306-5	Water bodies affected by water discharges and/or runoff	92	
Environmental Compliance			
Management Approach		Report by reference to the 2018 Dow 10-K, pages 14-15, Item 3, Environmental Matters. Effective April 1, 2019, refer to Dow Form 10.	
307-1	Non-compliance with environmental laws and regulations	Report by reference to the 2018 Dow 10-K, pages 14-15, Item 3, Environmental Matters. Effective April 1, 2019, refer to Dow Form 10.	
Employment			
Management Approach		59	
401-1	New employee hires and employee turnover	59, 62, 62	
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	61	

GRI Standard/Disclosure		Page Number(s)/Location	Omission
401-3	Parental leave	61	
Labor/Management Relations – Occupational Health and Safety			
Management Approach		74	
403-1	Occupational health and safety management system	74	
403-2	Hazard identification, risk assessment and incident investigation	75	
403-3	Occupational health services	76	
403-4	Worker participation, consultation and communication on occupational health and safety	77	
403-5	Worker training on occupational health and safety	78	
403-6	Promotion of worker health	78	
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Reference to description of Safe Materials Goal, page 27, for prevention of occupational health and safety impact of our products. Refer to page 97 for the discussion of transportation stewardship for prevention of safety impact of our transportation operations.	
403-8	Workers covered by an occupational health and safety management system	80	
403-9	Work-related injuries	80	
403-10	Work-related ill health	80	
Training and Education			
Management Approach		62	
404-1	Average hours of training per year per employee	62	
404-2	Programs for upgrading employee skills and transition assistance programs	62	
404-3	Percentage of employees receiving regular performance and career development reviews	63, 65	
Diversity and Equal Opportunity			
Management Approach		68	49, 50
405-1	Diversity of governance bodies and employees	69	
405-2	Ratio of basic salary and remuneration of women to men	65	
413: Local Communities			
Management Approach		69	
413-1	Operations with local community engagement, impact assessments and development programs	51	
413-2	Operations with significant actual and potential negative impacts on local communities	51	



