

## Bringing Chemistry to Life Growth and Sustainability in Asia Pacific | 2017 Sustainability Report







Advanced Materials EHS

Finance

Polyurethanes

Performance Products

Textile Effects Internal Audit







he Asia Pacific region — home to about half of the world's population — offers both opportunities and challenges when it comes to sustainability. Huntsman recognized the economic, social and environmental importance of the area more than 25 years ago. Today, we have a strong regional presence, supported by a dedicated team of associates who are leading our efforts to achieve sustainability in the products we develop and produce and to enhance the communities where we operate. We continue to invest in this important region of the world where our chemistry is having a tangible impact on creating a sustainable future.

#### ON THE COVER

**Bottom photo:** Long Han, Ph.D., Senior Research Engineer, Testing Services, in the Physical Testing Laboratory at Huntsman's Advanced Technology Center in The Woodlands, Texas, USA.

Photo by Mark Hiebert, HiebertPhotography.com

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## Bridging Geographies, Building New Networks

Huntsman's company roots date back to 1970, when the late Jon M. Huntsman founded Huntsman Container Corporation, a pioneer in plastics packaging. In 1987, the company signed its first polystyrene licensing agreement in Taiwan and Korea. We've been building our business presence in the Asia Pacific region ever since.

During the early years, we expanded through acquisition. In 1997, Huntsman's Advanced Materials business commissioned a site in Panyu, China, for production of epoxy resin and epoxy formulation products. Over the past two decades, most of our major greenfield investments and developments have been in Asia. Today, we employ approximately 3,500 associates — more than one-third of our global workforce — across 16 countries in Asia Pacific. Sales in the region account for over one-quarter of Huntsman's more than \$8 billion in global revenues. With developing economies in the region expected to grow by 5.5 percent in both 2018 and 2019\*, the Asia Pacific region will continue to play a vital role in our global business and our efforts toward sustainable development.

\* Source: UN News: 'Robust' Economic Growth in Asia-Pacific Last Year and 'Promising' Prospects Ahead, May 1, 2018

#### A LETTER FROM THE CHAIRMAN, PRESIDENT AND CHIEF EXECUTIVE OFFICER



ince we began publishing a sustainability report in 2010, we've shared our progress in a number of ways, from highlighting particular market segments, such as transportation, to featuring environmental impact areas, such as water and energy. This year, we're taking a different approach by highlighting a particular

region of the world — Asia Pacific (APAC) — and sharing how Huntsman is addressing sustainability there in three key areas: the products we manufacture, the communities we serve and the investments we make.

Huntsman has made a long-term commitment to the Asia Pacific region, which is home to well over half of the world's 7.6 billion people. The region's economies continue to develop and grow, many at rates well above those of mature economies in Europe and the Americas. With this growth comes many challenging trends — increasing urbanization, needs for adequate food supplies and clean water, greater transportation and energy and power requirements. Growing wealth generation results in more disposable income, which in turn increases consumer spending on household items, vehicles, electronics and clothing.

Led largely by China and India, countries in the region are requiring manufacturers to reduce emissions, improve health and safety, and ensure adequate food supply, clean water, comfortable living conditions and opportunities for their citizens. We are playing our part in these improvements and bringing our global know-how to the region.

In China, for example, the country's 13th Five-Year Plan outlines plans for green and low-carbon development by including each of the United Nation's 17 Sustainable Development Goals (SDGs) into national action plans. Similarly, India, one of the world's fastest-growing economies, is implementing the SDGs with goals around rural electrification, road and digital connectivity, sanitation and housing, emissions reduction, and growth in renewable energy, among others. For more than 25 years, Huntsman has contributed to the sustainability of the Asia Pacific region in many different ways. Our processes employ world-class technologies to reduce energy, water use, harmful emissions and waste, while operating at the highest standards of safety. In many of these areas, Huntsman's innovations and products play a critical role in meeting the region's sustainability goals.

Our associates and business partners engage in many corporate social responsibility projects and activities in the region, from helping to provide clean drinking water to rural villages and improving educational opportunities for young children to providing health education to young women and teaching animal husbandry skills to help local farmers increase milk yields in herds.

In 2017, Huntsman generated 27 percent of our revenues from sales in the APAC region. We export products manufactured there around the world. We will continue to make significant investments in the region to meet the needs of our customers worldwide.

The future has never looked brighter for our company. Last year, Huntsman completed the separation of our Pigments and Additives business, now known as Venator. The proceeds from the IPO, together with strong cash flow from our earnings, helped reduce our debt by \$2.1 billion, resulting in a strong balance sheet to support our business divisions, which are all poised for further growth, both in APAC and around the world. We remain committed to creating a sustainable future through our product innovations, our community outreach and our global investments.

Peter R. Huntsman Chairman, President and CEO

#### A LETTER FROM THE CORPORATE SUSTAINABILITY OFFICER





uring my career with Huntsman, I've had the opportunity and pleasure of living and working in the Asia Pacific region for six years during the early 2000s. It was at a time of rapid growth and investment in the region for Huntsman, as we built up our staffing levels and hired many of our current leaders.

During my time in APAC, while traveling through China, India, Indonesia, Malaysia and Vietnam — some of the most highly populated countries in the world — it was clear they were already facing many challenges which threatened long-term societal sustainability. These included worsening air pollution, population migration from rural areas to cities, transportation congestion, energy shortages and access challenges to clean water and other natural resources.

It gives me great pride when I see what Huntsman's products, production facilities and associates in the region are doing to address these issues and to provide solutions that reduce negative impacts and create a more sustainable future. It starts by incorporating sustainability goals at the planning and design stage of our projects, whether we are building new assets, developing product innovations or launching another corporate social responsibility initiative.

We have deployed world-class technologies to ensure our manufacturing facilities have the lowest possible impact on emissions, energy consumption and waste streams, and a minimal carbon footprint. We recently built a worldscale acid recycling plant in Caojing, China, to recover chlorine and recycle it within our polyurethanes production processes, reducing our energy usage. We have developed dyes for the textile industry that reduce energy usage and water consumption in the dyeing process by up to 50 percent, while reducing cycle times by 25 percent. In 2017, we held our fourth Chief Executive's Award for Innovation in Sustainability (see related story, page 11), which recognizes associates and teams from around the world for their commitment to sustainability. Because of our long-term business commitment in APAC, it came as no surprise that the top award came from our Polyurethanes team in China and their innovative solution to recycle excess heat to help heat homes. (See story, page 22). Forty percent of our entries this year were received from APAC, which illustrates the region's commitment to sustainable development.

Also last year, Huntsman rejoined the American Chemistry Council (ACC), reaffirming our commitment to Responsible Care<sup>®</sup>, the chemical industry's global initiative to drive major improvements in safety, health and environmental performance. Our commitment to Responsible Care<sup>®</sup> is global. In the U.S., Huntsman is working to attain Responsible Care<sup>®</sup> certification through the ACC. In India, we are working to meet the six codes of management under the Indian Chemical Council, which include standards for product stewardship, process safety, employee health and safety, pollution prevention, emergency response and communication, and distribution. And in China, similar efforts are underway to ensure our business practices and operations meet the standards expected of a Responsible Care<sup>®</sup> company.

Our work in APAC represents a microcosm of how Huntsman is addressing many sustainability challenges across the globe. We remain committed to developing world-class solutions to meet these challenges in a socially responsible manner.

Ron Gerrard Corporate Sustainability Officer

#### A LETTER FROM THE CHIEF EXECUTIVE OFFICER OF ASIA PACIFIC



have the honor of serving as both president of Huntsman's Polyurethanes Division and the CEO of our Asia Pacific region. I have had a close affiliation with the region since 1994 when I relocated to Shanghai to lead development of the polyurethanes market in China. At that time, the country was still opening up to foreign trade and direct investment, and there were many more bicycles on the roads than cars.

Over the past 25 years, we have steadily grown our business in the region to the point where now more than one-third of Huntsman's global workforce is employed in Asia. We have invested in upstream production and downstream formulation facilities throughout the region, major technology centers in Shanghai and Mumbai, and sales and technical support offices strategically located close to our customers. We firmly believe that the maintenance of a strong innovation engine is vital to the long-term success of our business, and that new technologies for Asian customers should be developed in Asia by our Asian associates.

Strength in innovation is prerequisite to addressing sustainability challenges, which are generally so broadbased that they necessitate a partnership approach to tackle them. Partnership with our customers is a given, but we also work hand-in-hand with our suppliers, governments, industry associations and non-governmental organizations (NGOs) to manage sustainability issues.

Increasingly, governments in Asia are taking strong positions on sustainability. China, in particular, has shifted its growth targets from gross domestic product alone to include sustainability objectives. Its 13th Five-Year Plan, which runs from 2016 to 2020, includes stringent targets and policies for environmental protection, with the aim of solving deteriorating standards of air, water and soil quality. Huntsman strongly supports these efforts. For example, in 2017 the government launched a program to improve air quality in north China during the winter months by replacing coal with natural gas as the source of energy for heating. The response was widespread development of district central heating (DCH) systems, for which Huntsman's environmentally friendly water-blown MDI Urethane pipeline insulation system is ideally suited. (See story, page 22.) This technology also can be applied to long-distance crude oil and natural gas pipelines. The Chinese government's Belt and Road Initiative estimates the need for 40,000 kilometers of pipeline to transport oil and gas — an important development that will further enhance sustainability across the region.

DCH systems are but one of many examples of governmentdriven environmental improvement efforts throughout the Asia Pacific region. Others include energy efficiency in buildings and reduction of volatile organic compounds (VOCs) to improve indoor and in-car air quality.

Sustainability challenges and, in many cases, their solutions are becoming common in the major economies across Asia. By definition, sustainability takes a long view. As we look forward to the next 25 years, we are excited and energized to play an ever-increasing role in the development of safe and sustainable solutions that will support growth of the Asian regional economies.

**Tony Hankins** CEO, Asia Pacific Region President, Huntsman Polyurethanes Division

#### 2017 KEY FIGURES AT A GLANCE

Field/Performance Indicator	Unit	2017	2016	2015
ECONOMY				
Revenues	\$million	8,358	7,518	8,139
Net Income	\$million	741	357	126
Adjusted EBITDA <sup>1</sup>	\$million	1,259	997	1,160
Capital Expenditures <sup>2</sup>	\$million	279	286	446
Free Cash Flow <sup>1</sup>	\$million	594	656	205
Income Tax Expense	\$million	64	109	60
Total Products/Co-Products <sup>3</sup>	million tonnes	7.21	8.36	8.12
Remediation and Closure Reserves <sup>4</sup>	\$million	21	22	22
EHS Capital Expenditures	\$million	47	55	121
ENVIRONMENT				
Total Energy	terajoules (TJ)	43,439	54,768	53,370
Total Greenhouse Gas (GHG) Emissions	mmt CO <sub>2</sub> e	2.58	3.37	3.35
Total Air Emissions <sup>5</sup> (excluding GHG)	tonnes	4,014	16,251	13,362
Total Water Discharge (Chemical Oxygen Demand)	tonnes	6,374	7,064	6,918
Total Nonhazardous Waste	tonnes	511,437	1,001,407	954,241
Total Hazardous Waste	tonnes	142,582	162,074	157,017
SOCIETY				
Regular Full-Time Associates		9,919	14,654	14,295
U.SBased Associates		2,764	3,280	3,267
Non-U.S. Associates		7,155	11,374	11,028
Contractors <sup>6</sup>	FTE	5,338	6,811	7,811
Total Recordable Incident Rate <sup>7</sup> (TRIR)		0.38	0.44	0.43
U.S. Chemical Industry Average <sup>8</sup>		TBD	2.0	2.1
Fatal Work-Related Accidents (Associates)		0	0	0
Fatal Work-Related Accidents (Contractors)		0	1	0

Note: The former Pigments and Additives business, now known as Venator, is treated as discontinued operations in all periods shown.

1 For a reconciliation, see page 47.

2 Net of reimbursements of \$3 million, \$32 million and \$15 million in 2017, 2016 and 2015 respectively.

3 Based on U.S. regulations, co-products are defined as materials that are produced intentionally during the production of another chemical, and which, in their existing state, are ordinarily used as commodities in trade by the general public. For more information, see 50 Fed. Reg. 625 (Jan 4, 1985); 40 CFR § 261.1(c)(3).

4 Pursuant to SEC regulations, the Company accrues liabilities (reserves) relating to anticipated environmental cleanup obligations, site remediation/reclamation and closure costs, and material monetary sanctions (i.e., enforcement penalties), which are recorded and can be reasonably estimated.

5 Air emissions are releases of volatile organic compounds (VOCs), carbon monoxide (CO), nitrogen oxides (NOx), sulfur oxides (SOx), particulate matter and other contaminants.

6 Number of Full-Time Equivalents (FTE) based on annual reported hours worked by contractors in our safety statistics program and 2,000 hours per FTE.

7 Does not include acquired Pigments and Additives sites.

8 The Bureau of Labor Statistics is expected to publish the 2017 rate in October/November 2018.



#### HIGHLIGHTS

- Peter R. Huntsman was elected Chairman of the Board of Directors, adding to his responsibilities as President and CEO. Jon M. Huntsman was named chairman Emeritus.
- We completed the separation of our Pigments and Additives business through an initial public offering of Venator Materials PLC.
- We generated \$594 million of free cash flow and achieved investmentgrade metrics on our balance sheet.
- Huntsman's Shanghai Campus was inaugurated in 2016 to consolidate some 700 employees and contractors into one location to enhance collaboration, idea generation and speed of innovation. The campus includes Huntsman's Asia Pacific Technology Center. (See page 27.)
- David Ming, Enshan Sheng, K.B. Liaw, and Lane Ding were appointed to the Huntsman APAC Leadership Team between late 2016 and early 2018. (See page 26.)
- We acquired IFS chemicals Limited, a leading independent formulator of methyl diphenyl diisocyanate (MDI)-based systems used in a variety of end markets, including insulation, appliances, automotive and elastomeric applications. The acquisition strengthens our differentiated downstream capabilities.

Top photo: Rani V. Gupta, R&T Chemist, Advanced Materials, at Huntsman's Mumbai Technology Center

Bottom photo: Huntsman's Panyu, China, manufacturing site

## Who We Are

For nearly 50 years, and in more than 100 countries, our 10,000 associates have been using science and ingenuity to create innovations that play a critical part in the everyday lives of millions of people. Through our four divisions, we serve a broad and diverse range of consumer and industrial end markets, including energy and fuels, transportation, home life, clothing and footwear, and food production and preservation. Huntsman is proud to deliver practical solutions that make and achieve the extraordinary.

#### **Polyurethanes**

We are a global leader in the manufacture of MDI\*-based polyurethanes used to produce energy-saving insulation; comfort foam for automotive seating, bedding and furniture; adhesives; coatings; elastomers for footwear; and composite wood products.

#### **Advanced Materials**

We produce technologically advanced epoxy, acrylic and polyurethane-based polymer products that are replacing traditional materials in aircraft, automobiles and electrical power transmission. Our products are also used in coatings, construction materials, circuit boards and sports equipment.

#### OUR ASIA PACIFIC FOOTPRINT\*



More than one-third of all Huntsman associates are based in APAC.



More than one-quarter of all Huntsman revenues are generated in APAC.

\* As of December 31, 2017. See pages 26-31 for details.

#### **Textile Effects**

We are a major global solutions provider for textile dyes and chemicals and digital inks that enhance color and improve fabric performance — such as wrinkle resistance, durability, water and stain repellency and fast drying — in apparel, home and technical textiles.

#### **Performance Products**

We manufacture a wide variety of chemical products that provide useful properties such as cleaning, dispersing, emulsifying and curing — in everyday items. Our product categories of amines, surfactants, maleic anhydride and glycols are used in agrochemicals, detergents and soaps, oil and gas production, gas treating, coatings, composites, urethane catalysts and epoxy curing.

#### BOARD OF DIRECTORS

Huntsman's highest governance body is our board of directors. Six of its seven members are independent or "non-executive." Peter Huntsman serves as the president and chief executive officer of the company and chairman of the board. As of the issuance of this report, the board was structured as follows:



Peter R. Huntsman President, Chief Executive Officer and Chairman of the Board



Dr. Mary C. Beckerle\* Director



Daniele Ferrari\* Director



Wayne A. Reaud\* Chairman of the Litigation Committee, Chairman of the Compensation Committee and Director



Nolan D. Archibald\* Vice Chairman of the Board, Chairman of the Nominating and Corporate Governance Committee and Lead Independent Director



M. Anthony Burns\* Chairman of the Audit Committee and Director



Sir Robert J. Margetts\* Director

\*Independent



Jon M. Huntsman 1937-2018

Jon M. Huntsman, founder of Huntsman Corporation, passed away February 2, 2018.

Widely regarded as one of his generation's great industrialists, Jon Huntsman was a pioneer in the chemical industry, having founded the Huntsman Container Company in 1970, which revolutionized packaging and plastics, and was the initial predecessor to what is today known as Huntsman Corporation.

During his tenure as chairman and CEO, Jon Huntsman led the company through constant, rapid growth. Today Huntsman Corporation and Venator Corporation, a public subsidiary of Huntsman Corporation, together represent an \$11 billion global manufacturer and marketer of chemicals.

In December 2017, Huntsman's board of directors named Jon Huntsman director and chairman emeritus, and elected Peter R. Huntsman president, chief executive officer and chairman of the board.

#### Independent Committees of the Board

The board appoints members to its independent Audit, Compensation and Governance committees. Each of these committees has a written charter approved by the board and available on the company's website. Independent directors currently comprise in full the membership of each of these three board committees.

#### Audit

#### Compensation

M. Anthony Burns, Chair Dr. Mary C. Beckerle Sir Robert J. Margetts Daniele Ferrari

#### Nominating and Corporate Governance

Nolan D. Archibald, Chair Dr. Mary C. Beckerle M. Anthony Burns Sir Robert J. Margetts Wayne A. Reaud, Chair Nolan D. Archibald Daniele Ferrari

#### SUSTAINABILITY COUNCIL

Led by Corporate Sustainability Officer Ron Gerrard, the council comprises senior representatives from the company's divisions and key functions. The council directs development of the corporate sustainability program and cultivates a common framework for sustainability, ensuring strategic alignment among the divisions, functions and executive team, led by Chairman, President and CEO Peter Huntsman. As of the issuance of this report, the council was structured as follows:



Ken Allinson Global Sustainability Coordinator



Gary Chapman Vice President, Global Communications



Barry Griffin Vice President, Operations Textile Effects



Pavneet Mumick Global Vice President Technology and Innovation, Polyurethanes



Ron Baughman Purchasing Director, Feedstocks



Ralph DiGuilio Vice President, Global R&D, Performance Products



David Hatrick Vice President, Innovation Advanced Materials



David Nutt Director Legal Services



Delaney Bellinger Chief Information Officer



Chris Everhart Director Human Resources



Ivan Marcuse Vice President Investor Relations



Amy Smedley Vice President and Deputy General Counsel Corporate Services and Government Affairs



#### 2017 INNOVATION IN SUSTAINABILITY AWARD WINNERS

Last year marked the fourth time Huntsman has honored its associates for their work toward sustainable development with the Chief Executive's Award for Innovation in Sustainability.

Top honors in 2017 went to a Shanghai Advanced Technology Center team, representing our Polyurethanes business, for its development of a PU-insulated pipeline system that supplies heat to a large population in North China. (See related story, page 22.)

Two submissions earned "highly commended" recognition. A Performance Products-Americas team was recognized for developing innovative additives that enable aged asphalt to be recycled from old roads and warm mix asphalt roads to be paved at lower temperatures, saving energy and reducing emissions. A Polyurethanes and Performance Products-Europe team also was recognized for developing a patented MDI-based system that reduces total emissions from seating foams by a factor of 10, without compromising comfort.

A total of 18 final submissions were submitted in this year's awards program, with every team's undertaking exuding the spirit of innovation. Top honorees were selected by a panel of Huntsman senior leaders, including Chairman, President and CEO Peter Huntsman, as well as an external stakeholder, Ulrich Bauer, Vice President, Manufacturing Innovation of POPS Footwear, Adidas Group.



#### UNGC COMMUNICATION ON PROGRESS

Huntsman works to ensure our corporate policies, procedures and guidance documents align with the United Nations Global Compact Ten Principles. The table below identifies relevant Huntsman policies, procedures, systems and actions that illustrate our progress.

Principles	Huntsman Policies and Procedures	Systems and Actions	
Human Rights Principle 1 Support for human rights	Since 2012, our Business Conduct Guide- lines (BCG) make specific reference to the UNGC and our commitment to operating	<ul> <li>Corporate Ethics and Compliance (E&amp;C) department</li> <li>"Speak Up" confidential reporting service for reporting concerns</li> <li>International Trade Compliance risk assessments for at-risk countries</li> <li>Pre-qualification due diligence of suppliers with high-risk profiles</li> </ul>	
<b>Human Rights Principle 2</b> Elimination of human rights violations	under its standards in all communities where we do business. In addition, Huntsman's Vendor Code of Conduct applies to all vendors and their employees, agents and subcontractors. See also: Huntsman Human Rights Policy		
Labour Principle 3 Ensuring freedom of association	We are required by U.S. law to ensure this right, and to post this right in view of associates.	• 53 percent of Huntsman employees covered under collective bargaining agreements	
Labour Principle 4 Abolition of all forms of forced labour	In every region of the world, our Human Resources department is charged with ensuring that direct-hire Huntsman associates have necessary and legally	• E&C combined policy audits conducted for selected sites each year that include human rights, child labor and forced labor	
Labour Principle 5 Abolition of child labour	required documentation to establish identity, legal age, and work status. See also: Huntsman Human Rights Policy		
Labour Principle 6 Elimination of discrimination	Huntsman upholds a Policy Against Discrimination, Including Harassment and Retaliation	<ul> <li>E&amp;C training</li> <li>Instructor-led training on Huntsman values conducted in identified focus areas</li> <li>Harassment in the Workplace online training</li> <li>U.S. Purchasing groups offer technical assistance for small or disadvantaged businesses in preparing and submitting bids to Huntsman</li> </ul>	
<b>Environment Principle 7</b> Precautionary environmental protection	Huntsman's Product Stewardship Standard EHS-700 outlines global requirements to ensure responsible management of EHS issues relating to Huntsman products throughout their life cycle.	<ul> <li>Product EHS Group actively manages product risk and is responsible for Safety Data Sheets and REACH compliance</li> <li>Management of Change (MOC) procedures at most facilities require consideration of environmental impacts</li> </ul>	
<b>Environment Principle 8</b> Initiatives to promote greater environmental responsibility	On our website, we publish our EHS Vision, EHS Protection Policy, EHS Vision and Policy Objectives, and Seven Strategic Focus Areas. Also, seven Global EHS Standards and a number of supporting procedures, in line with Responsible Care®, form the basis for our environmental management system. Huntsman's Waste Reduction Standard EHS-600 emphasizes adoption of waste minimization hierarchy.	<ul> <li>Membership in the Roundtable on Sustainable Palm Oil (RSPO) since 2011</li> <li>23 sites certified to ISO 14001</li> <li>Corporate EHS audit program</li> <li>Community Advisory Panels (CAP) at major facilities</li> <li>Founding Bluesign<sup>®</sup> system partner to promote responsibility throughout the textiles value chain</li> </ul>	

Principles	Huntsman Policies and Procedures	Systems and Actions
Environment Principle 9 Development and diffusion of environmentally friendly technologies	As a member of the American Chemistry Council (ACC), we support ACC's sustain- ability principles promoting Science-Based Frameworks & Transparency, Lightening Our Footprint & Increasing Circularity, and Accelerating Societal Benefits	<ul> <li>Chief Executive's Award for Innovation in Sustainability granted in 2017 recognized insulated pipe project utilizing waste heat recovery in China, enabling more sustainable cities and communities</li> <li>R&amp;D efforts to improve low-VOC products, lightweight materials for automotive and aerospace sectors, and energy-saving insu- lation for buildings and refrigerated transport</li> <li>Since 2016, we actively eliminated PFOAs (C8) chemicals from our Textile Effects portfolio</li> <li>AVITERA® SE dyes reduce water consumption in textile manufacturing by up to 50 percent</li> </ul>
Anti-Corruption Principle 10 Measures against corruption	Corporate E&C department oversees and supports our compliance with relevant laws, regulations and related Huntsman policies worldwide. See also: Huntsman Business Conduct Guidelines, Vendor Code of Conduct, Gifts & Entertainment Policy	<ul> <li>Array of tools for reporting (hotline, dedicated mailbox), investigating, tracking and correcting compliance and corruption allegations</li> <li>Third-party due diligence program to ensure vendors and representatives comply with all applicable laws and regulations and our policies</li> <li>Regular audits of Huntsman sites</li> </ul>



#### UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS

Building on the momentum of its Millennium Development Goals, in 2015 the United Nations set its sustainable development agenda for 2030 by publishing 17 Sustainable Development Goals (SDGs) and 169 targets supporting those goals. The World Business Council for Sustainable Development (WBCSD) asserts the SDGs can drive collaboration and harness the potential of the private sector to drive sustainable development.<sup>\*</sup> Huntsman believes the chemical industry has a key role to play in progressing the SDGs and creating solutions for a sustainable future. (See page 15.)

\* Source: World Business Council for Sustainable Development Chemical Sector Roadmap, April 17, 2018



# Our Commitment to Sustainability



untsman product innovations and economic and social investments in the Asia Pacific region are having a direct impact on three key pillars of sustainability: people, planet and profit. Our commitment is seen in the communities we support through social investments in education, health, economic development and environmental protection. We're developing products that help reduce the environmental impacts on our planet and implementing manufacturing processes that reduce our own environmental footprint. Our commitment to the region and its importance to our global business are evident in the investments we have made over the past two decades.





#### **Our Commitment to Community**

## Huntsman Empowers Villagers to Dream of a Better Tomorrow

Empowerment through education. That's the premise behind Huntsman India's Anandi initiative, which is improving life for local villagers through enhanced school facilities and teaching methods, better water supplies and enhanced livelihoods for farmers and herdsmen.

Launched in 2011, the Anandi campaign has resulted in better infrastructural facilities, an increase in education, health and awareness, and enhanced livelihoods for communities near Huntsman's Textile Effects manufacturing site in Baroda. The plant, which is a leading supplier of textile dyes, intermediates and chemicals, employs 325 workers.

"We chose the name Anandi, which means joyful learning, because we want our community social responsibility efforts to emphasize empowerment and learning rather than only philan-thropic or charity programs," notes Sneha Roy, corporate social responsibility (CSR) specialist.

#### Bottom photo:

Families in the Vadodara district learn the benefits of smokeless cooking methods as part of Huntsman's efforts to provide sustainable solutions to villagers, who traditionally cook with soot-emitting chulas.

**Top right photo:** Huntsman provides educational materials to enhance the learning environment.

Bottom right photo: Huntsman's Baroda manufacturing site





## 2,000

Huntsman's educational initiatives in India have helped more than 2,000 schoolchildren.



#### IMPROVING EDUCATION

To enhance education within villages located around the plant, Huntsman India adopted a four-pronged approach that includes:

- Enhancing the teaching skills of aanganwadis (childcare centers) through comprehensive teachertraining workshops
- Improving existing infrastructure to create vibrant child-friendly centers
- Providing a regular supply of educational materials to local schools
- Continuously and consistently engaging with parents

Aligning its objectives with the Government of India's Education for All Movement, the Anandi campaign has replaced rote-learning methods with activity-based techniques. Parents have noticed a remarkable improvement in their children's abilities and are actively getting involved in the educational process.

In addition, Huntsman has helped build science laboratories, provided school supplies, improved facilities at 19 aanganwadis and four schools, instituted a CSR Academic Achiever Award for students, facilitated computer education and organized summer camps.

Huntsman provides awareness sessions on road safety, personal hygiene, health care and correct usage of water to local residents. They also help distribute educational materials, from backpacks to books, to improve the learning environment.

As a result, more than 2,000 schoolchildren have been helped by Huntsman's educational initiatives in India.

#### EMPOWERING GIRLS

The Anandi campaign also focuses on educational opportunities for girls. Statistics show that in developing countries, adolescent girls are more likely to drop out of school than boys, especially in rural areas.

Huntsman has worked with local villages to create awareness campaigns for gender equality, with girls of Umraya village now attending schools.

In addition, Huntsman supports vocational training programs for girls aimed at developing an entrepreneurial spirit and a level of independence. Economic empowerment of girls and women can lead to greater gender equality and economic development. Huntsman facilitates multi-day vocational courses on jewelry-making, lamp decoration, sewing and stitching, and provides support for marketing products.

The company also supports several initiatives to improve the health and wellbeing of adolescents, especially girls, in rural villages.

#### SECURING WATER

Providing access to safe drinking water is critical for ensuring the health and wellness of local communities. To help address a potable water shortage faced by the Luna village, Huntsman constructed a 500KL underground water tank. Besides providing safe drinking water, the effort reduced the daily toil for women who spent considerable time and energy to secure water for their families.





#### IMPROVING LIVELIHOODS

Huntsman is also helping improve farming and agriculture in local villages, where dairy farming is a major livelihood. Huntsman launched a pilot project to improve animal husbandry, impacting 65 families in Umraya village. The project is aimed at improving the quantity and quality of cattle, which translates into increased incomes for dairy farmers, particularly women dairy farmers.

Farmers are educated about new and modern technologies and organic fertilizers, taking field trips to large dairy farms to see firsthand the latest practices. The successful initiative has been expanded to include another 50 families in Luna village.

"Anandi's multi-pronged approach has been instrumental in changing the social and economic landscape of the villages surrounding our Baroda plant," Roy says. "We've helped empower villagers to dream of a better tomorrow, which resonates with Huntsman's CSR philosophy of empowerment and sustainability."



More than 100 families benefited from learning better animal husbandry practices.



#### Enhancing the Cold Food Supply Chain

India ranks first in milk production and second in fruit and vegetable production in the world. The country also produces significant amounts of meat and meat products.

Realizing the importance of food preservation, the Indian government created the National Horticulture Board (NHB) in 1984 with an objective to reduce crop waste and to support cold chain logistics. As a result, standalone cold storage facilities have been developed across the county. But cold storage requires a good distribution network that completes the cold supply chain from the farm, to storage and distribution and, ultimately, to the consumer.

Huntsman is helping to meet that need by supplying formulated MDI systems to customers in India to produce insulated sandwich panels that are lightweight and have high thermal performance. Based on the product's success across Europe, where 85 percent of cold stores and food processing plants use polyurethane core insulated sandwich panels, India's NHB has recommended its preferred use to improve India's cold storage capacity and quality.

The lightweight sandwich panels can be rapidly constructed and are low maintenance for long-term performance. Factoryengineered composite panels eliminate on-site system construction and ensure both surface and interstitial condensation will not occur, preventing formation of bacteria and mold.

Polyurethane is used to insulate agriculture buildings and food processing factories, refrigerated transport and cold stores, supermarket cold rooms and display units, and domestic refrigerators. Moreover, due to its supreme insulation efficiency, polyurethane additionally offers higher energy savings compared to any other commercially available insulating materials. In a country like India, where electric power is a scarce resource, use of polyurethane is helping the government's accelerated investment in the cold food supply chain. China has recognized the importance of sustainable development as its economy continues to grow. Huntsman is committed to help the country meet its sustainability challenges through educational, social and environmental initiatives.



#### Building a Future Talent Pipeline

To help encourage technical studies among students in China and prepare a future workforce, the Huntsman Polyurethanes division established a five-year scholarship program for students studying chemistry, auto application and materials and engineering at Tongji University, a top-tier technology university in China. The scholarship fund is helping to develop a robust talent pipeline of future workers as demand for technical professionals grows in the region. Each year, 15 students are selected to each receive a US\$15,000 (RMB 100,000) scholarship. Over the past four years, 60 students have benefited from the scholarship monies.



#### Supporting Green Innovation

In support of the Chinese government's efforts to significantly improve air, water and soil quality, Huntsman's Advanced Technology Center in Shanghai recently worked with the Shanghai Minhang Environmental Protection Bureau (EPB) to significantly reduce the amount of hazardous wastes from its research and development (R&D) efforts. By centralizing purchasing for common chemicals, the company is able to share chemicals among various R&D divisions and separate nonhazardous waste from hazardous. Huntsman plans to introduce new technology for treatment of volatile organic compounds (VOCs) to help reduce active carbon, which becomes a hazardous waste after use. The company also intends to introduce wastewater treatment technology to help reduce wastewater and will work with the Minhang EPB to make its product showroom a place to exchange environmental protection experience with others. As a result, Huntsman received an award for Green Innovation from the Minhang EPB on World Environment Day in 2018.



#### Promoting Safer, More Sustainable Household Chemicals in China

Huntsman is taking part in the Together for a Sustainable Community (TFSC) initiative in China to promote innovation, sustainability and social responsibility. The industry-led effort, driven by the China Petroleum and Chemical Industry Federation (CPCIF), of which Huntsman is a member company, supports the government's call to build sustainable communities.

As part of the TFSC project, Huntsman was among eight member companies who hosted a 2018 Student Hackathon Chemical Innovation Design Challenge in Shanghai to develop solutions to improve the safe handling and disposal of household chemicals. Students from 40 universities from across China competed for a spot on one of eight finalist teams. The team from Tsinghua University, China's top-tier university, under the direction of Huntsman Environment, Health and Safety (EHS) leaders, won second place for its proposed solution to create an app that enables consumers to easily choose safer household chemicals based on social media recommendations from other consumers.



Teams from 40 universities throughout China competed at the 2018 Student Hackathon Chemical Innovation Design Challenge.

"As a chemical company, sustainable development is at the core of Huntsman's values," says Hans Han, operational safety manager-Asia Pacific, who coached the student team. "It's important as a company that we lead and nurture our younger generation to focus on sustainability and create innovative solutions."

As part of the TFSC initiative, Huntsman plans to host a Sustainable Community Day on October 30, 2018, opening its Shanghai Campus to key stakeholders the local community, university students and Huntsman associates — to share what the company is doing to contribute to the development of a sustainable community and its efforts in EHS practices.

**Pictured above:** Under the direction of Huntsman Operational Safety Manager Hans Han (third from left), the Tsinghua University student team won second place in CPCIF's Student Hackathon Chemical Innovation Design Challenge. The team created an app that helps consumers choose safer household chemicals based on social media recommendations.



## Our Commitment to Improving Life

### Making Sustainable Urban Life a Reality in China

Imagine having the ability to reuse exhaust heat from a power plant and transport that heat more than 30 miles (50 kilometers) away to supply central heating for more than two million residents. This scenario is a reality today because of state-of-the-art, water-blown pipe insulation developed by Huntsman. Polyurethane pipe insulation produced by Huntsman is helping to heat the homes of more than two million residents in Taiyuan, China, as part of a huge urban district central heating (DCH) system. The solution helps address the challenge of heating private and public buildings in a cost-effective, environmentally friendly way.

DCH systems use centralized power plants to create heat by burning fossil fuels or biomass materials. This heat is then used to create steam, or more commonly, hot water, which is subsequently circulated to residential and commercial buildings via a network of underground pipes.

DCH systems are a smart means of generating heat, en masse, for people living and working in densely populated areas. Producing heat centrally, at one location, for multiple users, is energy efficient and provides a simple way to control and cut carbon emissions. It also helps reduce fuel costs for consumers.

Recognizing that its knowledge of water-blown insulation systems could help the DCH industry, Huntsman set up a project team in China in 2012 to study the opportunity. The team created an insulation system that works with current spray appliance systems, conforms to fire-retardant regulations and is suitable for use alongside large-scale DCH pipes, which can be up to 4.6 feet (1.4 meters) in diameter. From a specially created DCH test lab, the team simulated and recorded spray applications and tested prototype insulation systems in subzero temperatures, ultimately creating a product that passed stringent DCH standards.



Today, Huntsman's water-blown DCH insulation systems are proving incredibly popular across China. In 2015, Huntsman won the tender for the Taiyuan DCH project — China's first long-distance district heating project and the country's largest of its kind. Backed by local government, the Taiyuan DCH project is made up of more than 23 miles (38 kilometers) of pipework and supplies heating to people across a 30-square-mile (80-square-kilometer) area.

The waste heat from the Shanxi Gujiao Power Plant, the largest in North China, can supply heat for two million residents in Taiyuan, the capital of Shanxi Province — half of the total population of the area in the winter.

In 2016, China accounted for more than 10 percent of the global share in the DCH market, a number that is set to grow as the Chinese government looks to deliver on its sustainability agenda and actively explores cleaner heating projects.

With the United Nations predicting that 66 percent of the world's population will be living in urban areas by 2050, district central heating offers an innovative approach for governments looking to cut carbon emissions, improve air quality and reduce energy demands.

#### Textile Innovations Save Water, Improve the Environment

Huntsman's Textile Effects division, headquartered in Singapore in the heart of the international textiles industry, is working with leading brands to provide them the most sustainable products for their garments and fabrics.

Traditionally, polyfluorinated compounds (PFCs) have been used to make end products more resistant to water and stains. Everything from cookware to cosmetics, and construction materials to outdoor gear, has been treated with PFCs to keep them looking newer for longer. But PFCs have been identified as environmentally unfriendly.

Huntsman's nonfluorinated durable water repellent can be used on high-performance synthetic textiles to provide environmentally friendly clothing that has extreme rain and stain protection. As a result, garments need less frequent washing, thereby reducing the environmental footprint of treated fabrics.

Similarly, Huntsman's reactive dyes use up to 50 percent less water and energy than conventional dyeing technologies, and are free of para-chloro-aniline and other hazardous substances. Made in India at the company's Baroda production plant and in Thailand at the Mahachai production plant, these dyes also help mills improve productivity and yield, and provide businesses with a cleaner supply chain.



Huntsman is contributing to sustainability in the Asia Pacific region in a variety of ways, from implementing manufacturing processes that conserve precious resources to developing products that help make life safer and more sustainable. Here are a few examples.

#### Improving Electric Vehicles

In 2017, China had the world's largest fleet of electric vehicles totaling 1.23 million.\* As countries throughout the Asia Pacific region continue to enact stricter environmental regulations to reduce CO<sub>2</sub> emissions, the electric car grows in popularity. To help reduce CO<sub>2</sub> emissions and dependency on fossil fuel, plug-in and battery-powered electric vehicles are gaining popularity in the Asia Pacific region. Huntsman is developing products to enhance power density, improve reliability and extend the life of these electric motors. At the Advanced Technology Center in Shanghai, Huntsman is working to replace traditional technology with a novel encapsulant that offers high thermal conductivity and crack resistance. The new encapsulant reduces the operating temperature of the motor, enabling smaller, lighter-weight motors that use less energy and get greater vehicular distance between charges.



In 2017, China had the world's largest fleet of electric vehicles totaling 1.23 million.\*



### Low-Emission Catalysts for Safer Vehicle Interiors

Although commuters typically spend only about five percent of their time in their vehicles, that familiar "new car smell" is caused by amine catalyst vapors and can create unhealthy human exposure. From the dashboard to interior panels, and seat coverings to flooring materials, most automotive interior components are made of plastics and other materials that contain volatile organic compounds (VOCs). In China, where the government has adopted new standards to limit VOCs in passenger cars, Huntsman is developing and producing advanced amine catalyst compositions to lower emissions to meet stricter standards in the automotive industry.

### Leading the Charge in Battery Solvents for Electric Cars

As governments in Asia Pacific countries call for reduction of CO<sub>2</sub> emissions, one solution is the electric car. Huntsman's high-purity carbonate solvents are helping lithium-ion battery makers achieve a more reliable battery system for electric automobiles. Huntsman is the only producer in North America and one of only a few companies in the world that produces these high-purity lithium-ion battery solvents that help batteries function, helping to reduce the number of cars on the road that run on combustion engines.



#### Manufacturing Safer Coatings

The coating industry in China produces more than 95 percent of the world's container coatings. To help meet the Chinese government's mandate to reduce emissions from VOCs by 10 percent by 2020, the China Container Industry Association (CCIA) transitioned from solvent-borne to more environmentally friendly waterborne coatings in 2017, with no exceptions. To contribute to a safer environment, a Huntsman innovation team at the Advanced Technology Center in Shanghai developed a new waterborne resin for container coatings with faster drying speed and better film appearance. More waterborne projects are at various stages of development to meet requirements from other industries. The team is working with Huntsman's Panyu, China, manufacturing site to introduce these products on a commercial scale as they are developed.

#### Sustainable Electric Power Grids

Increasing demand for electrical power calls for more efficient power transmission and distribution systems that can transmit more electricity with minimum loss and interruption of service. Huntsman is developing a high-performance epoxy pultrusion system to help mass produce composite cable to replace steel-core aluminum cable. Composite cable provides stronger mechanical properties, lower density and thermal expansion and greater stability and thermal resistance. It also reduces weight and sag by 50 percent, resulting in increased safety and improved ground clearance, both important features for long-term sustainability of electric power grids.

### Catalysts for Safer Building Insulation

Polyurethane foam insulation has evolved into one of the most effective insulation materials today, used in everything from commercial and residential construction to roofing, home appliances and packaging. Integral to its performance are the gases used as a blowing agent to create the foam insulation. In the past, these blowing agents included chlorofluorocarbons, which pose harm to the environment and health risks to building occupants. Huntsman developed a next-generation reactive catalyst for foam production that reduces these harmful emissions and improves air quality for greater health and comfort for building occupants.



#### Conserving Water in India

Huntsman is conserving water at its manufacturing site in Chakan, India, where the company makes polyol formulations. The site produces 35 kilotons of product per year while generating zero wastewater, thanks to a variety of water conservation initiatives that save approximately 700,000 gallons of water per year.

#### **Our Commitment to Asia Pacific**

## Think Globally, Act Locally

It's not often that a company has two CEOs in its leadership ranks, but naming a separate chief executive officer over Huntsman's Asia Pacific region shows the commitment to and the importance of this vital region to the company. Anthony (Tony) Hankins has served as CEO, Asia Pacific, since February 2011. He also serves as Huntsman Polyurethanes Division President. Hankins joined Huntsman in 1998, bringing extensive international experience in the plastics, fibers and polyurethanes businesses. Today, he oversees the activities of approximately 3,500 Huntsman associates located in APAC.

Huntsman operates in 16 countries in the Asia Pacific region, from China to New Zealand and from Pakistan to Japan. The APAC leadership team is made up of senior executives representing all four divisions and key functions.

"Huntsman is a global company with a local presence," Hankins says. "We hire and empower local experts to make the best decisions for our local customers. Local associates account for almost 100 percent of our APAC research and development technical team, and approximately 60 percent of them have been trained or have worked in other regions of the world."



#### PHOTO: HUNTSMAN'S APAC LEADERSHIP TEAM

Top row, left to right: David Ming, VP APAC, Performance Products; Gary Chapman, VP Global Communications; Chuck Hirsch, VP Commercial & Technical Resources, Textile Effects; K.B. Liaw, Senior Director Purchasing APAC

Middle row, left to right: Enshan Sheng, Managing Director Shanghai Campus; Lane Ding, VP APAC, Advanced Materials

Bottom row, left to right: Kenny Pan, VP APAC, Polyurethanes; Tony Hankins, President Polyurethanes, CEO APAC; Sandra Hoeylaerts, Global Director Talent & Organization Development



#### HUNTSMAN TECHNOLOGY CENTERS IN ASIA PACIFIC

In order to speed the introduction of new technology platforms into the Asia Pacific market, in 2013 Huntsman opened its 233,000-square-foot Asia Pacific Technology Center (ATC) in Shanghai's Minhang Development Zone.

This \$40 million, world-class R&D resource features laboratories and machine halls equipped with the same kind of advanced systems used by our customers in the region. At the ATC, approximately 160 scientists and technical associates develop applications to address the region's specific needs, enabling Huntsman to shorten the innovation cycle and introduce new product developments into the market more rapidly.

In 2014, we reconfirmed our commitment to the Indian market with the inauguration of Huntsman's India corporate office in Mumbai. The 7-story, 222,000-square-foot sub-continent headquarters dedicates three floors to state-of-

the-art laboratories and research facilities. More than 100 technical staff members help develop products and innovations that are unique to the subcontinent's needs.

We also have smaller technology centers in Asia Pacific specifically in Kobe, Japan, and Melbourne, Australia that focus on innovating new products to meet the needs of local markets. Currently we are developing a Japanese Prototype Center in Kawasaki City, Japan, devoted to producing new technologies for automotive seating in the Japanese market.

**Top photo, left to right:** Advanced Materials Quality Manager Mangesh Bhurke, Technology Manager Manish Jaiswal, and Manager Field Promotion & Technical Support Nilesh Petkar at Huntsman's Mumbai Technology Center

Bottom photo: Huntsman's Asia Pacific Technology Center, Shanghai





INDIA'S TIMELINE OF GROWTH



Vantico International acquired by Huntsman and becomes Advanced Materials division

## 2001

Acquired ICI India's polyurethanes business

#### EXPANSION IN THE INDIAN SUBCONTINENT

India is emerging as an important player in multiple industries, and Huntsman is focusing its energies and resources to make the most of those opportunities.

Huntsman acquired ICI India's polyurethanes business in 2001, and we've been growing our business in the country since. Today, the company's presence in India extends across three manufacturing facilities and 30 strategic locations to facilitate just-in-time deliveries to customers.

Huntsman established a new headquarters in Mumbai in 2014. The 222,000-square-foot facility includes three floors of leadingedge laboratories and a Customer Experience Centre. The centralized location provides an environment for collaboration, creativity and innovation to adapt to a dynamic business environment. 2009

Acquired the textiles dyes business from Metrochem Industries Limited in India

2012

Polyurethanes division set up a greenfield facility at Chakan, Pune



Acquired the Textile Effects business from Ciba Specialty Chemicals

2011

Acquired the Performance Products business from Laffans Petrochemicals Limited

## 2014

Established a new headquarters in Andheri (East), Mumbai

Amalgamated Baroda Textile Effects Private Limited, Huntsman Performance Products (India) Private Limited and Huntsman Advanced Materials (India) Private Limited with the parent company, Huntsman International (India) Private Limited (HIIPL)



#### TEXTILE EFFECTS DIVISION GLOBAL HEADQUARTERS IN SINGAPORE

Recognizing Asia as the epicenter of the textile industry, the company made a bold move in 2009 to relocate its Textile Effects global headquarters from Basel, Switzerland, to Singapore. With customers and competitors moving their centers of business to Asia, Huntsman realigned its structure to meet industry trends.

Today, Huntsman Textile Effects is at the forefront of working with leading brands to help get the most sustainable products into their garments and fabrics. The division's location in the Asia Pacific region keeps the business close to customers, enabling the company to develop new products to meet the industry's needs.





#### **Regional Headquarters**



Huntsman Asia Pacific Corporate Headquarters Shanghai, China



Huntsman Indian Subcontinent Headquarters Mumbai, India



Textile Effects Division Global Headquarters Singapore



#### Research and Development

#### Shanghai, China (ATC)

Huntsman's Advanced Technology Center in Shanghai combines research and development activities across the Asia Pacific region under a \$40 million world-class facility.

#### Mumbai, India

Co-located with Huntsman's India headquarters, this state-of-the-art R&D facility supports all four Huntsman divisions with innovations unique to the subcontinent's needs.

#### Melbourne, Australia

This Performance Products R&D site provides technical support to the automotive, agrochemical, mining, construction, coatings, and home and personal care markets in the region.

#### Kobe, Japan

A Japan Technical Team provides product development and technical services in support of selected Advanced Materials applications.





## Data on Performance



ur sustainability program enables us to follow trends and report metrics in important areas like energy and water usage. Our intention is to always present our data so that stakeholders can easily track our progress, and we continue to explore additional reporting guidelines, such as the new GRI Standards.

#### Venator

In August 2017, we separated our Pigments and Additives (P&A) business through an IPO of ordinary shares of Venator, formerly our wholly owned subsidiary. In this report, for environmental metrics, we present a restated current Huntsman portfolio for the last five years. For years 2013 through 2016, we show the data inclusive of former Huntsman P&A operational data as "discontinued operations" for reference. No Rockwood data is included in any of the years. For 2017, all Venator data (including Rockwood and former Huntsman P&A operations) is excluded.

#### **Baseline**

Huntsman originally established a 2006 baseline after the sale of the Base Chemicals and Polymers division, which was divested in 2006 and 2007. Pending final review and approval, in next year's report, as a result of the separation of Venator, we plan to establish a new baseline using 2017 environmental data as the reference year.

Each year, environmental data and emissions estimates are reviewed for changes as a part of our data validation process. As a result, figures and totals depicted in this year's sustainability report may include minor updates versus data published historically.

The list of disclosures on which we are reporting can be found on the inside back cover of this report.

Please contact us at sustainability@huntsman.com with any questions or comments about these changes.

#### **Production Intensity**

Production intensity is a demonstration of the impact of a given metric weighed against a unit of production. In the context of energy, for example, if you consider the absolute total for the amount of energy we used in a given year and divide that by the amount in tonnes of products and co-products we manufactured in that same year, the result would be the production intensity value of energy consumed per tonne of product for that year. Or, more simply, energy intensity. We use these values to demonstrate changes in the efficiency of our operations.

Total Energy Use = Production Intensity

Top photo: Senior Technician Sun Taili (left) and Technical Service Manager Chen Hongyan at the Huntsman Shanghai Campus

#### Total Energy Consumption

#### HOW WE DID

Total energy use in 2017 was below our 2006 baseline and decreased relative to 2016, comparing the current vs. restated portfolio. Production intensity decreased slightly in 2017 due to a decrease in energy usage.

Huntsman has continued to stay competitive by improving the energy efficiency of our operations, thereby reducing our energy impacts and saving costs. We continue to improve the reliable and economical supply and use of energy at our sites, using efficient technologies to generate steam and electricity, as well as energy-efficient production processes. Port Neches, one of our largest sites, utilizes waste heat recovery and combined heat and power systems for greater energy efficiency.

#### TOTAL ENERGY CONSUMPTION




### Non-Greenhouse Gas (GHG) Emissions to Air

#### HOW WE DID

Total hazardous air pollutant emissions were significantly below the 2006 baseline and decreased slightly in 2017 compared to the restated 2016. The 2017 non-GHG emissions to air decreased significantly vs. the 2016 data inclusive of P&A.

On a routine basis, Huntsman monitors, tracks and reports chemical emissions to the atmosphere — whether specifically permitted, part of routine operations, or the result of accidental releases. Air emissions are releases of volatile organic compounds (VOCs), carbon monoxide (CO), nitrogen oxides (NOx), sulfur oxides (SOx), particulate matter and other contaminants. Permitted air emissions are typically generated during routine manufacturing operations, volatilization from chemical storage, wastewater treatment and equipment emissions.

AIR EMISSIONS (tonnes)



Discontinued operations - P&A Current Huntsman portfolio 2006 Baseline (16,771 tonnes)

### **Total GHG Emissions**

#### HOW WE DID

Our total carbon dioxide equivalent ( $CO_2e$ ) emissions in 2017 are below the 2006 baseline and decreased relative to 2016. This decrease occurred both in direct and indirect emissions. Production intensity also decreased due to a decrease in  $CO_2e$ .

Huntsman continues to focus on managing our environmental footprint and delivering solutions to help our customers manage theirs. We also capture exhaust  $CO_2$  from some sites and sell it into the industrial gas market. In 2017 alone, certain sites took measures to reduce direct emissions and improve operations, such as converting from diesel powered to electric forklifts, installing new plant operation systems, using new blowing agents with lower carbon footprints, upgrading boilers, and converting from fuel oil to natural gas-fired equipment.

#### Sources of GHG

The combustion of fossil fuels needed to manufacture chemicals and to generate electricity and steam releases CO<sub>2</sub>, methane and nitrous oxide — all greenhouse gases. Other GHGs that may be released during chemical processing operations are hydrofluorocarbons (HFC), perfluorocarbons (PFC) and sulphur hexafluoride (SF<sub>6</sub>). These are typically released from manufacturing equipment that uses these chemicals as refrigerants.

### GHG emissions from Huntsman manufacturing facilities worldwide

Defined by various protocols, Scope 1 emissions are GHG emissions attributable to the combustion of fossil fuels at our sites, non-combustion GHGs emitted from manufacturing processes, wastewater treatment, or refrigeration units due to fugitive emissions. Scope 1 GHG emissions from Huntsman are generally proportional to our direct energy consumption. Scope 2 emissions are associated with the generation of indirect energy and are proportional to our indirect energy consumption (i.e., purchased electricity). Huntsman does not measure or disclose Scope 3 emissions.

#### **GHG Protocol explained**

The GHG Protocol defines direct and indirect emissions as follows:

- Direct GHG emissions are emissions from sources that are owned or controlled by the reporting entity.
- Indirect GHG emissions are emissions that are a consequence of the activities of the reporting entity, but occur at sources owned or controlled by another entity.

The GHG Protocol further categorizes these direct and indirect emissions into three broad scopes:

- Scope 1: All direct GHG emissions.
- Scope 2: Indirect GHG emissions from consumption of purchased electricity, heat or steam.
- Scope 3: Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g., transmission and distribution losses) not covered in Scope 2, outsourced activities, waste disposal, etc.

#### TOTAL DIRECT GHG EMISSIONS





\_\_\_\_\_ 2006 BASELINE (2,486,938 tonnes)

#### TOTAL INDIRECT GHG EMISSIONS



### **Discharges to Water**

#### HOW WE DID

Since 2010, chemical oxygen demand (COD) levels have shown a steady downward trend and are well below our 2006 baseline. Reductions are due in part to tighter permit limits and additional government controls over discharges. Production intensity increased slightly, due to lower production levels vs. 2016.

Huntsman's discharges to water have decreased since 2010 through 2015, remained nearly flat in 2016, and decreased again in 2017. There are two reasons for this trend. First, we are complying with — and in many cases exceeding — increasingly strict water quality standards. Second, we understand water quality's direct connection with water scarcity. Keeping water clean goes hand in hand with the efficient use of water. Huntsman's improvements on water quality strengthen the company's commitment to conserving water.

#### **COD** explained

In environmental chemistry, the chemical oxygen demand (COD) test is commonly used to indirectly measure the amount of organic compounds in water. Most applications of COD determine the amount of organic pollutants found in surface water (e.g., lakes and rivers), making COD a useful measure of water quality. COD is essentially a laboratory test to determine whether a specific wastewater will have a significant adverse effect on fish or aquatic plant life.









#### WATER USAGE - WATER OUT



### **Total Water Usage**

#### HOW WE DID

"Water In" volumes and production intensity decreased slightly in 2017 vs. the restated portfolio. "Water Out" volumes and production intensity increased slightly in 2017 vs. the restated portfolio. Comparing the two metrics, the gap between "Water In" and "Water Out" volumes — which considers losses such as evaporation or water that goes into products - has steadily narrowed since 2014. In other words, Huntsman is consuming proportionally less water year on year compared to what we take in and is using water more efficiently.

Reporting of global water use for Huntsman began when we conducted our first-ever global Water Risk Assessment in 2014. This is our fourth year of reporting water use. We continue to look for and evaluate water efficiency measures, including piping upgrades, optimizing water treatment processes and evaluating plant operations.

#### Water In/Water Out explained

"Water In" is the amount of water pumped, piped or otherwise brought onsite for use in site operations. "Water In" can include: surface water, including water from wetlands, rivers, lakes, and oceans; ground water; and well water. "Water Out" is the amount of this water that is subsequently discharged from our facilities.

#### TOTAL WASTE



### **Total Waste**

#### HOW WE DID

Total waste increased slightly in 2017 compared to the restated 2016. Compared to the portfolio with P&A, total waste and production intensity both decreased significantly due to the large decrease in nonhazardous waste from the removal of discontinued operations.

Nonhazardous waste and hazardous waste, as defined by local laws, are strictly monitored and reported separately at each of our manufacturing facilities. The reported waste generation includes waste that is sent to offsite landfills, injected into deep underground wells, sent to third-party treatment facilities or reclaimed/reused/recycled (including burned as fuel — waste cogeneration). These categories include waste generated during normal operation and maintenance activities.



#### HAZARDOUS WASTE



### Nonhazardous Waste

#### HOW WE DID

Disposal of nonhazardous waste increased slightly in 2017 compared to the restated 2016. Production intensity decreased slightly due to the removal of discontinued operations.

It is Huntsman's corporate policy to prevent and reduce waste. We regularly carry out audits to inspect external waste management plants and ensure that our waste is disposed of correctly. We continually look for ways to reduce waste and improve operational performance.

### **Hazardous Waste**

#### HOW WE DID

Disposal of hazardous waste in 2017 increased slightly compared to the restated portfolio, but remains slightly below the 2006 baseline.

Production intensity increased slightly in 2017 but was nearly flat when compared to the prior year.

### Injury and Illness Rate

#### HOW WE DID

In 2017, Huntsman had an OSHA Total Recordable Incident Rate (TRIR) of 0.38. This is the lowest TRIR in the company's history and represents 10 fewer recordable injuries than in the previous year. Our rate is slightly below last year's 0.43 TRIR and remains significantly below the 2016<sup>°</sup> U.S. chemical industry average of 2.00, as reported by the U.S. Bureau of Labor Statistics.

The TRIR reflects 56 recordable injuries, which is a 15 percent decrease in injuries from 2016. Incident rates are calculated using the U.S. Occupational Safety and Health Administration (OSHA) formula:

# of Injuries & Illnesses x 200,000 # of Work Hours = Total Recordable Incident Rate

The reported value includes injury/illness data for both associates and contractors.

#### Injury rate improvements

The drop in total injuries was caused by improvements in performance of Huntsman contractors, as the number of contractor injuries was reduced by 48 percent (21 to 11) from 2016 to 2017. The severity of contractor injuries also saw substantial improvements last year with only two injuries resulting in losttime away from work, compared to six in 2016.

Huntsman aims to continue improving its safety performance in relation to both associates and contractors. We are in the process of revising our global EHS procedures, and will be completing implementation of the updated safety requirements in years 2018-2020.



-O- U.S. chemical industry average

#### **INJURY AND ILLNESS RATE**

PROCESS SAFETY GAP CLOSURES STATUS



### Process Safety Implementation Rate

#### HOW WE DID

By the end of 2017, companywide implementation of Huntsman's world-class Process Safety Management standard reached 100 percent completion.

Process safety has always been a Huntsman core value and an integral part of our global EHS standards. Several years ago, Huntsman's senior leadership embarked on a journey to develop and install a more robust world-class process safety management system across all Huntsman facilities. Now that the implementation process is complete, our focus will shift further toward strengthening our management systems and operational discipline to drive process safety performance.

Today, we have a Global Process Safety Center of Excellence staffed by highly skilled and experienced process safety experts. Guided by this team, Huntsman's senior leadership has conducted process safety leadership workshops in every region of the world in which Huntsman operates to ensure all levels of management understand their role in proactively preventing process-related incidents.

### Average Hours of Training and Development per Year

#### HOW WE DID

Huntsman provides associates with training and development to further enhance their professional skills. These training and development courses include EHS, compliance, soft skills, technical skills and leadership development.

Region	Total Hours Completed	Number of Associates	Average Training Hours Per Associate
Americas	157,045	3461	45
APAC (Asia/Pacific)	123,522	3820	32
EAME (Europe/Africa/Middle East)	72,268	2638	27
TOTALS	352,834	9919	36

These compliance training hours are for classroom and e-learning courses.

### Total Training Hours on Policies Concerning Human Rights

#### HOW WE DID

In 2017, more than 22,812 training hours, covering more than 99 percent of associates, were completed on human rights topics.

Huntsman expects all associates to be aware of and understand the company's core policies and procedures. All new associates are required to take core compliance training, which includes information on human rights policies and covers regulations on child labor and industrial labor laws. Huntsman associates are periodically required to complete online training on Respect in the Workplace, Business Conduct Guidelines and the Huntsman Privacy Program.

### Total Training Hours in Leadership

#### HOW WE DID

In 2017, 1,096 associates participated in various leadership development courses for a total of 22,031 total leadership training hours.

Huntsman develops associates who are in or will assume supervisory or management positions in the organization to ensure these associates feel comfortable dealing with employee-related matters, such as setting objectives, coaching, career development plans, and performance management. This training is made available in local languages.

### Percentage of Associates Trained in Compliance and Anti-Corruption

#### HOW WE DID

In 2017, 99 percent of Huntsman associates completed compliance courses.

Huntsman has zero tolerance for illegal behavior. Our Business Conduct Guidelines (BCG) outline the ethics and values of the company and are shared with all associates. Core compliance training modules include Respect in the Workplace, Business Conduct Guidelines, Records Management, EHS Protection, Anti-Corruption, Global Anti-Bribery and Huntsman Data Privacy Program. Courses are offered in both computer-based and instructor-led formats.

### Global Promotions/ Transfers per Headcount

#### HOW WE DID

In 2017, 816 associates, or 8.2 percent of total headcount, received promotions and 1,529, or 15.4 percent of total headcount, were transferred to another internal role.

## Number of New Hires by Region

#### HOW WE DID

In 2017, we hired a total of 872 new associates, which accounted for 8.8 percent of the total Huntsman headcount.

#### 872 NEW HIRES

301	281	178	112
Americas	APAC	EAME	Other
	BY RI	EGION	

### Voluntary Turnover Rate by Age

#### HOW WE DID

In 2017, 606 associates voluntarily left the organization. This equates to a global turnover rate of 6.1 percent of total headcount.

#### TURNOVER PERCENTAGE

22%	<b>32</b> %	15%	<b>16</b> %	15%
20-29	30-39	40-49	50-59	60-69
	В	Y AGE GROU	P	

The 20-29 age group includes a small portion of turnover data from associates younger than age 20, but this does not materially impact the percentage.

### **Direct Economic Value Generated and Distributed**

#### HOW WE DID

2017 was transformative for our company as we achieved several milestones. We continued to focus on growing our downstream differentiated businesses and increased our adjusted EBITDA by 26 percent versus 2016. Our free cash flow generation was \$594 million. In addition, we separated our cyclical Pigments and Additives business through an initial public offering of Venator Materials PLC. The company transformed its balance sheet to investment-grade metrics by paying down approximately \$2.1 billion of debt in 2017 through the combination of the total net proceeds from the Venator IPO and secondary offering and our free cash flow.

December 31,		
2017	2016	2015
\$8,358	\$7,518	\$8,139
\$1,812	\$1,526	\$1,734
\$165	\$203	\$205
\$741	\$357	\$126
\$1,259	\$997	\$1,160
\$594	\$656	\$205
\$279	\$286	\$446
	December 31,	
2017	2016	2015
\$10,244	\$9,189	\$9,820
\$1,817	\$3,776	\$4,521
	\$8,358 \$1,812 \$165 \$741 \$1,259 \$594 \$279 <b>2017</b> \$10,244	2017 2016   \$8,358 \$7,518   \$1,812 \$1,526   \$165 \$203   \$741 \$357   \$1,259 \$997   \$594 \$656   \$279 \$286   December 31, 2016   \$10,244 \$9,189

Note: The former Pigments and Additives business, now known as Venator, is treated as discontinued operations in all periods shown.

1 For a reconciliation see page 47.

2 Net of reimbursements of \$3 million, \$32 million and \$15 million in 2017, 2016 and 2015, respectively.

3 Net debt calculated as total debt excluding affiliates less cash.

### Reconciliation of Net Income to Adjusted EBITDA

	Twelve months ended December 31,		
In millions, except per share amounts	2017	2016	2015
NET INCOME	\$741	\$357	\$126
Net income attributable to noncontrolling interests	(105)	(31)	(33)
NET INCOME ATTRIBUTABLE TO HUNTSMAN CORPORATION	636	326	93
Interest expense from continuing operations	165	203	205
Interest expense (income) from discontinued operations	19	(1)	_
Income tax expense from continuing operations	64	109	60
Income tax expense (benefit) from discontinued operations	67	(24)	(16)
Depreciation and amortization from continuing operations	319	318	298
Depreciation and amortization from discontinued operations	68	114	101
Acquisition and integration expenses	19	12	9
EBITDA / Income from discontinued operations, net of tax	(312)	(81)	217
Minority interest of discontinued operations	49	11	7
U.S. tax reform impact on minority interest	(6)	—	
(Gain) loss on disposition of businesses / assets	(9)	(97)	1
Loss on early extinguishment of debt	54	3	31
Expenses associated with merger	28	—	
Certain legal settlements and related (income) expenses	(11)	1	1
Net plant incident costs	16		
Amortization of pension and postretirement actuarial losses	73	55	66
Restructuring, impairment and plant closing and transition costs	20	48	87
ADJUSTED EBITDA	\$1,259	\$997	\$1,160

#### Summarized Statement of Cash Flows

		Twelve months ended December 31,		
In millions	2017	2016	2015	
Net cash provided by operating activities	\$842	\$974	\$614	
Capital expenditures	(282)	(318)	(461)	
All other investing activities, excluding acquisition and disposition activities <sup>1</sup>	6	_	52	
Non-recurring merger costs <sup>2</sup>	28			
TOTAL FREE CASH FLOW <sup>3</sup>	\$594	\$656	\$205	

1 Represents "Acquisition of business, net of cash acquired," "Cash received from purchase price adjustment for business acquired," and "Proceeds from sale of business/assets."

2 Represents payments associated with one-time costs of the terminated merger of equals with Clariant.

3 Includes restricted cash and cash held in discontinued operations.

# Report Parameters

We follow a calendar-year reporting period as we have with previous annual sustainability reports. Our most recent report was for 2016, published in September 2017.

For this 2017 sustainability report, we consider input from third-party questionnaires, external ratings and general indices, as well as feedback from our key stakeholder groups: our associates, customers, plant communities and investors. The metrics and data provided in this report reflect that input and feedback and help us continue to enhance our reporting and improve our sustainability program.

The report includes data related to all Huntsman enterprises where we have operational control (more than 50 percent) and joint ventures where we have management control. The data reported have been obtained primarily from our financial management reporting systems, various human resources information systems and the Huntsman corporate reporting systems for environmental, health and safety performance indicators. We are confident in the overall reliability of the data reported, but recognize that some of these data are subject to a certain degree of uncertainty, inherent to limitations associated with measuring, calculating and estimating data.

Minor corrections in historic data may be due to data errors or other approved reasons. Each year, energy consumption and environmental emission estimates are recalculated and revised for all years in the annual sustainability report, as attempts are made to improve both the analyses, through the use of better methods or data, and the overall usefulness of the report.



A publicly held company, Huntsman Corporation's global headquarters is in The Woodlands, Texas, USA.

As of December 31, 2017, total common stock outstanding was 240 million shares.

For more information, please see the Investor Relations section of our website, www.huntsman.com.

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Enriching lives through innovation

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