

# 2014 **SUSTAINABILITY REPORT**

DOW BENELUX





The Dow Chemical Company (Dow) is highly committed to transparency and verifiability when it comes to attaining its sustainability goals. That is why Dow publishes an annual global Sustainability Report in line with the Global Reporting Initiative (GRI) G4 framework. Dow Benelux B.V. is a subsidiary of The Dow Chemical Company. Considering Dow Benelux's importance and impact in the Netherlands, a national report has also been compiled. This report is also inspired by the GRI G4 guidelines. In addition, the criteria of the Transparency Benchmark in the Netherlands are followed.

Two production sites in the Netherlands - Dow Terneuzen and Dow Delfzijl - also belong to Dow Benelux B.V. The Business Process Services Center, abbreviated as BPSC, operates under a separate entity. Dow's activities in Belgium are carried out from Belgian companies, namely Dow Belgium B.V.B.A. and Polyol Belgium B.V.B.A.

Where reference is made to Dow Benelux in this report, this refers to the limited liability company Dow Benelux and the above-mentioned Dow legal entities established in the Benelux. The actual report on the environment and economic

development focuses on production in the Netherlands and, in particular, at Dow Terneuzen. This is because, with its 17 plants, Terneuzen is by far the largest site and the location where our impact is greatest. The report provides more insight, details and background on matters of material importance for our stakeholders.

The numbers and figures stated in this report are derived from Dow's own data and reporting systems. Environmental data is reported separately in the Annual Environmental Report (AER) and validated by the relevant competent authority.

Energy figures are reported within the guidelines of the MEEAgreement (multi-year agreement for energy-efficient ETS companies), CO<sub>2</sub> figures from the CO<sub>2</sub> emissions report submitted to the government and verified by KEMA. The safety figures are in keeping with OSHA guidelines. Financial and other economic data are obtained from Dow ERP data systems, which are validated by an external accountant. We strive to continuously improve our report. This year was the first time an external verification of selected data for 2014 was carried out. The results are included at the end of this report.

The Sustainability Report can be accessed at [www.dowbenelux.com](http://www.dowbenelux.com).

The corporate sustainability reports and other reports relevant for stakeholders can be found at [www.dow.com](http://www.dow.com):

2014 Dow Annual Report under Investors, financial information.

Quarterly Updates are found under Company, Sustainability, Reporting Center.

Questions, comments and suggestions related to this Sustainability Report can be sent to the following address: [beneluxinfo@dow.com](mailto:beneluxinfo@dow.com).

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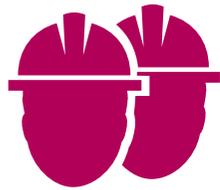
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The Dow Chemical Company underwent a major transition this past decade, from a company with a primary focus on the production of chemicals and plastics to a company with a diverse portfolio of market-oriented solutions. Sustainability has become an increasingly inextricable part of our strategy. What has not changed is that Dow is strongly rooted in the regions in which we operate. This is definitely true of the Benelux, where we are celebrating our 60th anniversary in 2015. With the establishment of a trading office in Rotterdam nearly 60 years ago, Dow created a link to the European continent, a region that today represents nearly one-third of Dow's worldwide sales. Many of Dow's global strategic customers are also located

in the Benelux region. Dow's location in Terneuzen, which is celebrating its 50th anniversary in 2015, continues to be the second largest Dow production location.

In the Benelux, we contribute to Dow's sustainability goals with passion and conviction. We are fully aware that our activities have an impact and feel it is important to make that impact transparent. Although there has always been a strong focus on reducing our footprint, nowadays we are also getting better at demonstrating where we can make the greatest difference, where we can create added value, and where we can find solutions that both benefit society in a sustainable manner and are good for

our business through collaboration with government agencies, customers and suppliers. This self-awareness fits the new Dow, in which geography and national organizations will be playing a more important role.

I am extremely proud of the results Dow Benelux has achieved. We are well on our way towards achieving our sustainability goals for 2015. At the same time, we are eagerly looking forward to a new 10-year period in which we set the bar even higher when it comes to reducing our footprint and delivering sustainable solutions. With the new horizon of 2025 in mind, sustainability has clearly become a business proposition. This offers Dow in

the Benelux numerous opportunities and possibilities to achieve even more of our potential, to make an even greater difference in the areas that are important to us, such as safety, the environment, energy, water and innovation, and strengthen collaboration with our stakeholders and chain partners. Our people give us the confidence that we can achieve our ambitions. Their knowledge, drive and daily commitment form the foundation on which we build our future.

Anton van Beek  
*President of Dow Benelux*



From an operational perspective, the year 2014 presented two themes. We had already achieved many important 2015 goals in 2013, including "zero incidents", which was considered an impossibility. Maintaining that zero score was the ultimate goal. Unfortunately, it did not turn out as hoped. This once again serves as a reminder that safety is never safe enough. Keeping everyone on their toes is a daily effort. Our motto to keep everyone working with the same level of focus is: We either do it safely or not at all. After all, without safety everything comes to a standstill. This is our "license to operate" and is something we are committed to focusing on daily - regardless of our goals. Although we shall never sit back com-

placently when it comes to safety, and we will carefully examine every single incident, when it comes to safety, we rank among the top, both within Dow and within our sector - and we plan to keep it that way. We continuously pursue possible improvements, such as working together more intensively with contracting firms. These firms play an important role in the safe daily operations of our plants and in keeping our installations in optimum condition. Most of our plants are advanced in years, but still rank among the top when it comes to reliable production. In that sense, 2014 was a top year. In spite of continuously challenging market conditions, we have managed to improve the staffing of our plants.

We also experienced an increase in production, especially during the second half of the year.

In 2014, Terneuzen once again proved to be one of the safest, strongest and most reliable sites. That forms an excellent basis and gives us the confidence to further develop towards a sustainable future in our region. In addition to the necessary attention we will be devoting to further improving our own processes and minimizing our impact on the environment, we are also investing increasingly in projects, together with our partners, that can take us even further. Collaboration on the issue of water is a good example of this. I am very proud that we are working here

on innovative solutions for water shortages, developments in which we already take the lead internationally. Another example is the Maintenance Value Park next to our grounds, the preparations for which are in full swing. It is essential for us to keep our plants competitive and in top condition, but also to enhance the economic strength of the entire region. These win-wins not only make us stronger and more sustainable, but also our surroundings and all of our stakeholders.

Arnd Thomas  
*General Director of Dow Terneuzen  
and Vice President of Benelux Site Operations*





# A BIRD'S-EYE VIEW OF DOW

DOW COMBINES THE STRENGTH OF SCIENCE AND TECHNOLOGY TO CREATE INNOVATIONS.



DOW COMBINES THE STRENGTH OF SCIENCE AND TECHNOLOGY TO CREATE INNOVATIONS THAT CREATE VALUE AT THE INTERFACE OF CHEMISTRY, PHYSICS AND BIOLOGY, WHILE AT THE SAME TIME CONTRIBUTING TO SOLVING THE WORLD'S MOST URGENT PROBLEMS, SUCH AS THE NEED FOR CLEAN DRINKING WATER, THE DEPLETION OF NATURAL RAW MATERIALS, FOOD SHORTAGES AND THE EFFECTS OF CLIMATE CHANGE.

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### Dow Benelux profile

Dow's integrated, market-driven portfolio of specialty chemicals, hi-tech materials and plastics are trendsetting within the industry. They provide technology-based products and solutions to customers in approximately 180 countries and in high-growth industries such as packaging, electronics, water, coatings and agriculture.

In 2014, Dow achieved total worldwide sales of more than 58 billion dollars and had around 53,000 employees. The company's more than 6,000 products are produced at 201 sites in 35 countries across the world.

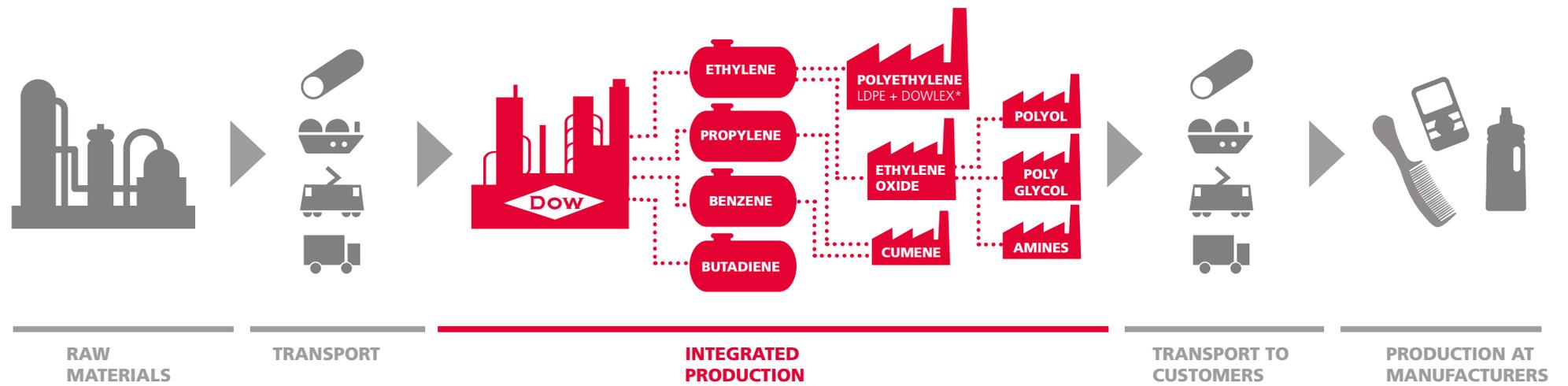
The Dow Benelux production sites produced a total of more than 6 million tons of plastics and chemicals in 2014. These products can be found in numerous products and applications that we encounter in our everyday life, such as packaging, electronics, toys and medicines. At the end of 2014, Dow Benelux had 1,945 permanent employees and 438 contract employees. The BPSC also grew to 125 permanent employees and 453 temporary employees.

### Our value chain

Dow operates in an integrated chemical production chain. Raw materials are converted into products through various process steps. These products are sold by Dow to customers as end products, but are actually intermediates. Dow Benelux is an important location for the production of hydrocarbon-based chemical products, the most important chemical main flow in Dow along with chlor-alkali-based chemical products.

Our sustainable role in the chemical chain lies primarily in the core process of converting raw materials into chemical products. Our knowledge and technology have enabled us to successfully take major steps towards increasing the sustainability of our production chain. But in keeping with our broad view of sustainability, we are increasingly and more emphatically viewing sustainability throughout the entire chain, from raw material to the customer, through the eyes of our stakeholders.

OUR VALUE CHAIN



# KEY FIGURES FOR DOW BENELUX

**Dow Terneuzen** Second largest Dow production site in the world. The naphtha crackers form the heart of the Terneuzen site (also see infographic on value chain at Dow Terneuzen). Total of 17 plants. The head office for the Benelux, one of Dow Europe's largest research departments and the Business Process Services Center (BPSC) are also located in Terneuzen. The BPSC provides services to Dow businesses and joint ventures in Europe, the Middle East, Africa and India (EMEAI).

**Brussels** The office for EU Government Affairs & Public Policy, which promotes the interests of Dow in European Union organizations, is located in Brussels.

**Tertre** Dow produces polyol in Tertre, a raw material for polyurethane production, similar to MDI in Delfzijl.

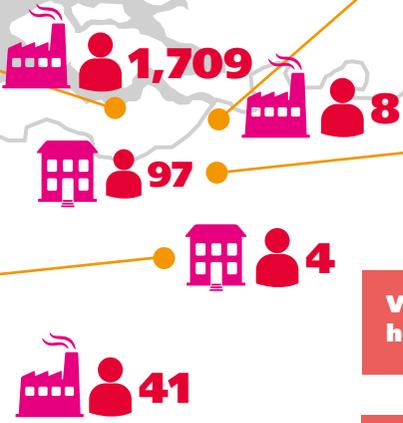
**Zwijndrecht** In Zwijndrecht, Dow has one plant for the production of Dow Cellosize™. This substance is used as a thickener in various products, such as paint, building materials and personal care products. Ineos runs this plant for Dow.

**Wilrijk** Dow's service center and sales office for the Benelux, including the Dow Agrosiences sales office.

**Virtual / home office** 31

**BPSC** 578  
The BPSC is a multi-services organization. It provides services to Dow businesses in the Dow EMEAI region. 125 permanent employees and 453 temporary employees.

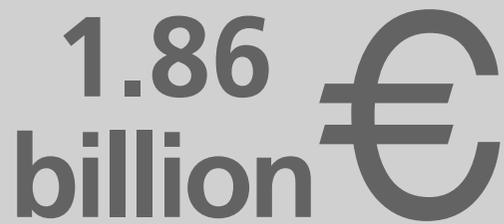
**Delfzijl** In Delfzijl, Dow produces Methylene Diphenyl Diisocyanate (MDI), an important basic ingredient for polyurethane. Polyurethane is used in such products as mattresses, furniture, refrigerators, dashboards and cell phones.



## Production volume



## Sales



## Formation of Dow Benelux





# OUR STRATEGY

AT DOW WE COMBINE SCIENCE AND TECHNOLOGY.

AT DOW WE COMBINE SCIENCE AND TECHNOLOGY AND WORK WITH PASSION AND CREATIVITY IN DEVELOPING SOLUTIONS AND INNOVATIONS. THIS ENABLES US TO GENERATE VALUE - FOR OUR COMPANY, HUMANITY AND THE ENVIRONMENT.

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### Sustainability goals

In 1995, Dow launched its first set of global sustainability goals - the 2005 EH&S goals - that primarily focus on improving Dow's environmental, safety and health impact. This enables us to reduce our global footprint in a targeted manner.

These goals were followed by Dow's 2015 Sustainability Goals in 2005, intended to broaden the reach of the sustainability goals, as well as contribute with new products and innovations for solving global issues like the climate problem, food scarcity, inadequate supply of drinking water and housing. The attention devoted to optimizing our operations remained at the same high level during this entire period.

The period covered by these goals will come to an end in 2015. A third set of ambitious sustainability goals was published in 2015: Dow's 2025 Sustainability Goals. The primary focus of these goals is to provide a blueprint for the transition to a sustainable planet and society.

In its pursuit of a permanent improvement of its reporting practices, Dow also carried out an assessment of the materiality of sustainability on the group level.

To this end, a large-scale and comprehensive survey was held in 2013 among all relevant stakeholder groups. They indicated what they believed were important issues for Dow. In addition to this impact analysis based on input from our stakeholders,

Dow takes stock each year on the corporate level of the most important issues and priorities. This is based on permanent input from globally operating functional teams like Public Affairs, Government Affairs, Regulatory Affairs and Dow's Issue & Policy management. This sustainability assessment resulted in the materiality matrix (see page 11).





## Materiality matrix

This materiality matrix was fundamental in determining the sustainability priorities for the Benelux. Our goal is to add maximum value to The Dow Chemical Company and contribute as much as possible towards achieving the company's sustainability goals. To this end, we translated the focal areas of the matrix into our own strategic agenda of priorities and goals. Consequently, a number of components reported on the group level (non-highlighted parts of the matrix) are not included because these apply to a lesser degree on the Dow Benelux regional level. Dow's global goals were also gradually adapted to be more relevant to the Benelux. This is clarified where necessary in the various chapters.

MATERIALITY MATRIX

	HIGH	VERY HIGH		
IMPORTANCE FOR STAKEHOLDERS AND THEIR DECISIONS	LEADING IN PRODUCT SAFETY	<b>WATER SUSTAINABLE CHEMISTRY</b>	<b>SAFETY LOCAL PROTECTION OF SAFETY, THE ENVIRONMENT &amp; ENERGY</b>	VERY HIGH
	SUSTAINABLE SUPPLY CHAIN	<b>SUCCESSFUL RELATIONSHIP WITH THE LOCAL COMMUNITY</b> BIODIVERSITY & ECOSYSTEMS	SUSTAINABLE AGRICULTURE	
	<b>BREAKTHROUGHS IN GLOBAL CHALLENGES</b>	<b>CLIMATE CHANGE</b>	COMMERCIAL POLICY	HIGH
	SIGNIFICANCE OF IMPACT			

## Our sustainability calendar

The following overview is a summary of the Dow Benelux goals. We consider these goals to be instrumental, considering our influence and impact and their relevance for our stakeholders. They include the 2015 goals for The Dow Chemical Company for the period 2005–2015, translated for the Benelux, as well as goals inspired by Dow's corporate goals, but adapted over time to more specifically apply to the sustainability contribution of Dow Terneuzen in particular. The development of the set of goals therefore also reflects how the approach to sustainability has developed at Dow Benelux and, in addition to the protection of people, the environment and the community, has also shifted to a greater focus on our positive contribution to sustainability, such as through our innovations and products.



OUR SUSTAINABILITY CALENDAR: OVERVIEW OF GOALS AND RESULTS

Our focus	KPIs	Goal	Achieved in 2014	Status
 <p><b>SAFE FOR PEOPLE AND SURROUNDING AREA</b></p>	<p><b>Personal safety</b> Safety incidents expressed as injury &amp; illness rate</p>	<p>75% improvement in 2015 compared to 2005 (0.08)</p>	<p>0.06</p>	
	<p>Number of process safety incidents</p>	<p>Maintain at 0</p>	<p>1 process safety incident</p>	
	<p><b>Safe environment</b> Number of incidents expressed as LOPCs (spills &gt; 50 kg)</p>	<p>Maximum of 4</p>	<p>6 spills, 2 more than in 2013</p>	
	<p>Compliance with all legal and regulatory demands</p>	<p>Maximum of 3 compliance issues</p>	<p>The number of issues has been reduced significantly. There was only 1 observed violation in 2014</p>	
 <p><b>ENVIRONMENT</b></p>	<p><b>Emissions</b> Emissions of substances into the air</p>	<p>In 2015, 30% reduction in VOC, priority emissions and NO<sub>x</sub> compared to 2005</p>	<p>Overall reduction of 24% compared to 2005 based on average reduction achieved from 2005–2015</p>	
	<p>Reduction of CO<sub>2</sub> emissions</p>	<p>In 2015, 10% reduction in greenhouse gas emissions intensity compared to 2006</p>	<p>Decrease in intensity of 0.3% compared to 2005</p>	
	<p><b>Waste</b> Reducing amount of waste processed internally and externally</p>	<p>Keep absolute emissions below 2006 level</p>	<p>Absolute emissions decrease of 13% compared to 2006</p>	
	<p>15% reduction compared to 2005</p>	<p>15% reduction compared to 2005</p>	<p>Overall reduction of 54% achieved compared to 2005</p>	





## ENERGY

Improving energy efficiency

Energy savings in own processes and/or chain in 2015 of at least 15% of own energy consumption in 2005

18% energy savings, primarily in the chain



In 2015, 25% improvement of energy intensity compared to 2005

Energy intensity increase of 3% compared to 2005



## WATER

Minimizing our water footprint

Closure of water cycle in 2020; alternatives for around 5 million cubic meters of drinking water collection

Launching of joint research initiatives to break down technological barriers



## INNOVATION

Contributing to breakthroughs for our customers

Examples of successful product innovations

Implementation of Crystal PE



Contributing to sustainable chemistry and processes

Contribution is measurable thanks to global recognition of the Benelux contribution

Terneuzen share in Dow awards for innovation, technology, development and waste reduction



## MAKING A SUSTAINABLE DIFFERENCE

Open dialogue with the local community and most important stakeholders

Acceptance by our local environment

~90% of neighboring residents are positive or neutral towards Dow



Contributing to local economy and quality of the living environment

Providing a proportional contribution

Concrete investments in the local community, such as making donations and contributing to good technical education



## OUR PEOPLE

Derived directly from Dow's corporate goals for 2005–2015

Not on track  
 On track towards achieving 2015 goal



We achieved many good results in 2014 in terms of sustainability. The developments within the various focal areas are discussed in the upcoming chapters of this report.

## Ambitions

Dow is preparing for a new phase in its sustainability journey. Dow presented its 2025 Sustainability Goals this past April. This highly ambitious program has seven main goals, all of which are aimed at achieving the transition to a sustainable society.

The main goals are:

- Take the lead in the development of a blueprint. This refers to the development of a blueprint model for the integration of government, business and social systems in order to facilitate a transition to a sustainable planet and society.
- Develop innovations that are a genuine breakthrough for humanity.
- Contribute to a circular economy.
- Increase the value of nature by including nature as a consideration in all strategic decisions.
- Promote confidence in chemical technology.
- Committed and involved employees with impact.
- Rank among the global top in terms of operational performance.

To achieve these ambitions, a list of new goals have been formulated and then translated into measurable key performance indicators for Dow worldwide. In the coming period, these will be translated for Dow Benelux.

## The challenges

A chemical company like Dow faces numerous challenges. The following are the most significant ones.

**The European market.** The majority of products produced by Dow Benelux are exported to other European countries.

The European market for chemical products is not a growth market in principle. In 2014, this market came under further pressure due to adverse exchange rates. Competition from the Middle East and Asia is also increasing because these regions are making large-scale investments in the development of a chemical industry. Dow, for example, has personally invested billions in the construction of Sadara, a large chemical complex in Saudi Arabia that is expected to start delivering products in 2016.

**Competitive position.** Dow's competitive position has been under pressure for years due to the relatively unfavorable position of raw materials in Europe. A sharply declining oil price in 2014 did not help reduce this pressure. This adverse competitive position makes it especially difficult to attract funding for new investments. After all, on a global level, the primary focus is on which investment yields the highest returns. Furthermore, the chemical sector in the Netherlands faces a relatively high regulatory burden. This entails additional costs and further reduces the willingness to innovate and invest.

**European energy policy.** Europe does not have a coherent energy policy. At the same time, Europe imposes standards for the generation and production of sustainable energy. As a result, every country approaches the transition towards more sustainable energy in a different manner. This creates an uneven playing field, resulting in competitive disadvantages. It also creates a misrepresentation of matters in the debate on a transition towards a more sustainable economy. The emphasis too often lies on the development of alternative energy, renewables and a switch to biobased. In reality, we should use all possible energy sources, including fossil energy. This is particularly true in the chemical sector, which requires sufficient and affordable energy in order to arrive at innovations that bring us closer to a sustainable future.

**Transition and innovation.** Much attention is devoted - and justifiably so - to the social necessity of a transition to a more sustainable economy. Companies like Dow play a key role in this, but cannot go it alone. Numerous changes also require public investments in order to bridge the gap between what is technically possible and what is economically feasible. Public funding for research and development is scarce, highly fragmented and usually not applicable to innovation projects with genuine potential.

## Administration, supervision and management

The Board of Directors of Dow Benelux B.V. is responsible for general management and comprised of the following members: Anton van Beek\* (chairman), Arnd Thomas (also director of the site in Terneuzen) and Pierre Taalman. Marc Sloot\* serves as secretary. The Supervisory Board of Dow Benelux B.V. supervises the directors of the company and advises the Board of Directors. This board was comprised of the following members on 31 December 2013: Gerard van Harten (chairman), Brian Ames and Noelle Walsh.

In addition to this formal structure for the Benelux, the Benelux is also part of Dow's global matrix structure. This means that employees are part of the globally organized businesses or functions, but are also often affiliated with a regional organization, as is the case with the Benelux. In 2014, a development was launched within Dow that gives the regions more direct responsibilities and, consequently, holds them more accountable for the results achieved. On June 1, 2014, Anton van Beek was appointed Country Leader and President of Dow Benelux in connection with the appointment of Willem Huisman as Country Leader and President of Dow Germany. Anton van Beek also continues to be responsible for the Dow coatings business.

The Country Leadership Team, under the direction of Anton van Beek, is responsible for strategy development and implementation within the broader framework of Dow EMEAI. The President of Dow Benelux is also a member of the EMEAI Leadership Team.

Terneuzen management is headed by the general director of the site, Arnd Thomas. As Vice President of Operations, he is also responsible for all production and operational activities in the Benelux. Three functional and multidisciplinary teams fall under his responsibility: the People Success Leadership Team (PSLT), the Responsible Care Leadership Team (RCLT) and the Site Services Leadership Team (SSLT).

*\* Also responsible for managing the Belgian sites together with other managers.*



# SAFETY

SAFETY ALWAYS COMES FIRST.

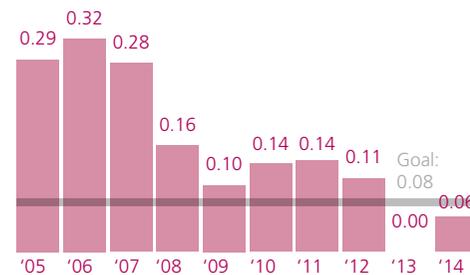


**SAFETY ALWAYS COMES FIRST. THE SAFETY PERFORMANCE OF THE BENELUX SITES IS AT AN EXCEPTIONALLY HIGH LEVEL, ALSO COMPARED TO THE REST OF THE INDUSTRY.**

The safety of the employees working at the site and surrounding area is always top priority. The chemical industry in the Netherlands operates at a high safety level compared to other sectors. Dow is among the frontrunners in the chemical industry. Within Dow, the Benelux sites have also been among the safest in the world for many years. This is the result of a consistent policy, enforcement of high quality standards and daily investments in safety. Our excellent safety performance is also due to the fact that safety is an integral part of our company culture. It is something we work on each and every day, since safety is never absolute. We use programs, inspections and training for our employees, as well as contractors and suppliers, to continuously pursue our ultimate goal: year-in, year-out production without any accidents or process safety incidents.

**DEVELOPMENT OF PERSONAL SAFETY**

ALL SITES INCLUDING CONTRACTOR EMPLOYEES  
2005–2014



Accident absenteeism index: accidents per 200,000 hours worked

**Personal safety**

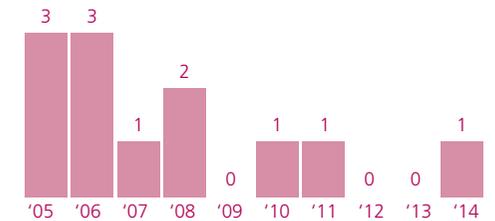
The year 2014 had two sides to it in terms of personal safety. In Terneuzen, a record was achieved for the number of incident-free days that had never been achieved by any other site. However, a personal safety incident occurred in March that put an end to that record. All in all, we remained under our target in terms of personal safety, expressed in accidents resulting in absenteeism. This made 2014 the second best year ever. The MDI plant in Delfzijl enjoyed its sixth year in a row without any personal safety incidents.

**Process safety**

Process safety refers to the management of potential risks of damage to people and the environment. An incident qualifies as a process safety incident if it involves a disruption of the process, resulting in an explosion or fire that causes damage of more than \$25,000, and/or an accident resulting in absenteeism, and/or emissions of a chemical substance above a specific threshold value. A process safety incident took place on December 7 at the LHC in Terneuzen. During work on a pump, methane began leaking out. The process was brought to a halt in order to stop the leakage. This caused sudden and intensive flares, which could be seen from quite a distance.

**PROCESS SAFETY INCIDENTS**

2005–2014



The incident in 2001 took place in Delfzijl. The other process safety incidents took place in Terneuzen.

# Safety First

We launched "Safety First" in 2011. This broadly based and ambitious action program aims to further improve safety throughout the entire petro and chemical chain. It is an initiative of VNO-NCW, the chemical industry (VNCI), the petroleum industry (VNPI), tank storage companies (VOTOB) and dealers in chemical products (VHCP). The Safety First program enables the chemical chain to increase safety awareness throughout the sector. It stimulates chemical companies and their chain partners to raise their safety performance and culture to a higher level. To achieve this, they share, among other things, knowledge about methods for promoting safety. Attention to and concern for safety among the partners of chemical companies,

both suppliers and buyers, is another important cornerstone of Safety First.

In the fall of 2014, Anton van Beek presented himself as the new chairman of Safety First during National Safety Day. "Safety is never absolute. In my mind, the value of Safety First is that we have created a platform that lets us permanently work on trust, a unique partnership between chemical companies, chain partners and the government, industry, educational sector and knowledge institutes that also lets us communicate more transparently to the community."



THE WINNERS OF THE ESSAY COMPETITION WERE PUT IN THE SPOTLIGHT ON SAFETY DAY AND PRESENTED WITH A PRIZE BY JAN VAN DEN HEUVEL FROM DCRM (LEFT), CHRIS KUIJPERS, DIRECTOR GENERAL OF THE MINISTRY OF INFRASTRUCTURE AND ENVIRONMENT (THIRD FROM RIGHT) AND ANTON VAN BEEK, CHAIRMAN OF SAFETY FIRST (RIGHT).

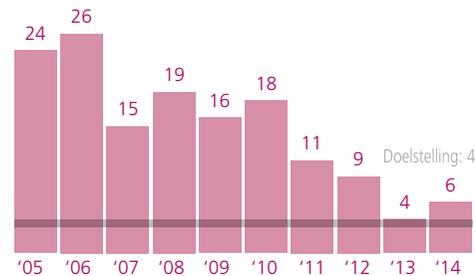


## Safe environment

Every loss of product or chemical that does not qualify as a process safety incident is reported within Dow as a "Loss of Primary Containment" (LOPC). Every spill or wastage of product greater than 50 kilos qualifies as an LOPC. This can involve gases, chemicals, liquids or solid substances like plastic granules. In other words, whatever is not contained in the designated pipe or container. The leakage in itself does not have to be hazardous, as is often the case since the process provides for a safe collection of any leakages. Liquid products, for example, are collected in concrete tanks, while gases are burned off. LOPC is therefore also an indicator of how we manage our process in order to avoid damage to people and the environment.

The 2015 goal for reducing leakages - maximum of 4 and a reduction of 75% compared to the 35 incidents in 2015 - was already achieved in 2012. Unfortunately, the downward trend did not continue in 2014. With 6 leakages, we did not meet the goal we had set ourselves of a maximum of 4 leakages.

LEAKAGES (LOPCS) SINCE 2005, TERNEUZEN



## Compliance

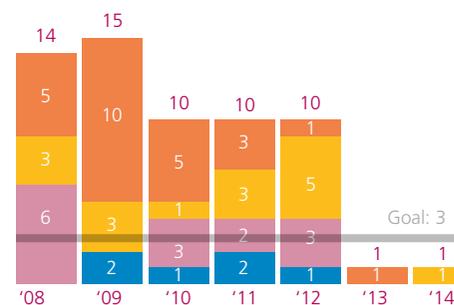
A large chemical complex like Dow in Terneuzen has 400 different laws and regulations with which to comply. Some of these are rules, decisions and regulations based on Dutch legislation, though many of them are also based on European decisions. Dow also has its own global standards and requirements. In essence, all of these laws, rules and regulations are aimed at ensuring the safest possible operation of the plants with minimum impact on the environment and surrounding area. All of this is specified in a permit enforced by the government. But Dow also has its own monitoring system of self-assessments and audits.

To comply with the increasing requirements of government inspections, extra measures have been introduced to improve Dow's comprehensive and globally implemented management system. ISO 9001, ISO 14001 and Responsible Care requirements have also been included in this Operating Discipline Management

System (ODMS). At the site level, Dow's ODMS is in brought into line with national statutory and regulatory requirements. When complete, this lays the foundation for system-oriented monitoring, a monitoring model in which the government gradually lets Dow use its own monitoring and control system and only carries out minimal government inspections. At the end of August 2013, Dow, the Province of Zeeland and the Rijkswaterstaat (Directorate-General of Public Works and Water Management) signed an intention declaration for system-oriented monitoring.

Since 2012, compliance with external legislation and regulations has also been included in our sustainability goals, since it is an indicator of the degree to which we recognize and manage risks on our premises and in our processes, as well as procedures we have established to this end. As a result, we have explicitly shown that we aim to take the lead in terms of compliant behavior because we recognize that this is an essential part of our "license to operate".

COMPLIANCE AT DOW TERNEUZEN



## Legal dispute

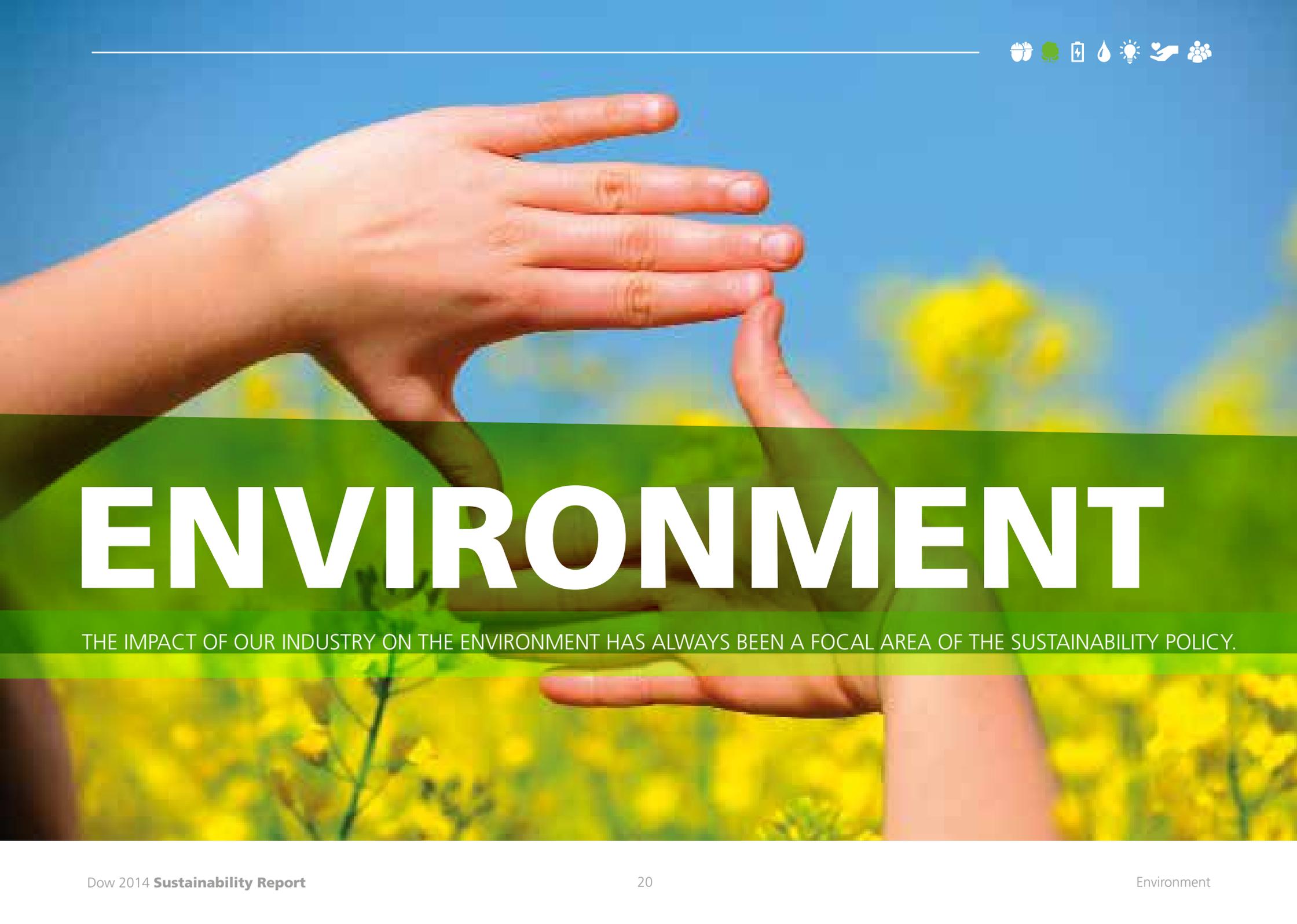
During the first three months of 2014, a lengthy legal dispute against Dow finally went to court in Middelburg. During the hearing, details were given of the environmental and safety incidents from the period 2005–2008, for which Dow had been indicted by the Department of Public Prosecution.

In its verdict, the court stated that the safety culture at Dow was not inadequate. This acknowledgement is important for Dow. Nonetheless, the court found Dow guilty on 20 of the 22 counts brought against it. Dow believes that its defense arguments were insufficiently considered in the verdict and has appealed the decision. It now remains to be seen when the appeal will be heard.

■ Permit exceedance  
■ Indication with recovery deadline  
■ Violation  
■ Fine

The figures shown here are based on data reported by Dow Benelux in the Dow reporting system for EH&S incidents (GIRD). These have been verified by internal EH&S audits carried out by the Dow auditing organization.

In Delfzijl, there was one permit exceedance during the years 2010, 2012 and 2013.



# ENVIRONMENT

THE IMPACT OF OUR INDUSTRY ON THE ENVIRONMENT HAS ALWAYS BEEN A FOCAL AREA OF THE SUSTAINABILITY POLICY.

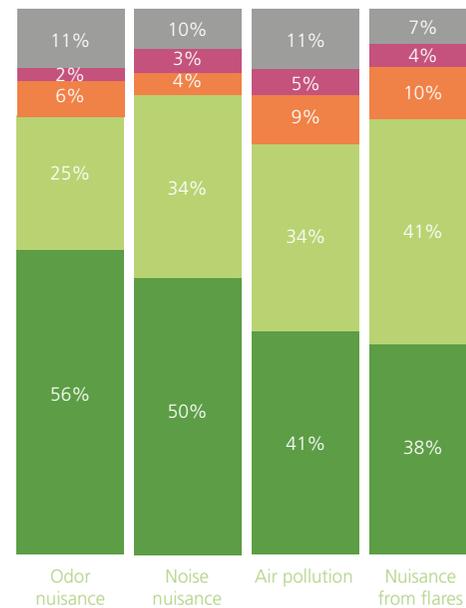


THE IMPACT OF OUR INDUSTRY ON THE ENVIRONMENT HAS ALWAYS BEEN A FOCAL AREA OF THE SUSTAINABILITY POLICY. LOGICALLY, THE EMPHASIS IS ON LIMITING EMISSIONS INTO SOIL, WATER AND AIR AS MUCH AS POSSIBLE. A VARIETY OF MEASURES HAVE RESULTED IN A SIGNIFICANT REDUCTION IN EMISSIONS IN RECENT YEARS. HOWEVER, THIS DOES NOT CHANGE THE FACT THAT WE CONTINUE TO WORK TO FURTHER OPTIMIZE OUR PROCESSES.

Another perspective on our environmental performance comes from neighboring residents. How do our neighbors view our environmental performance? This has always been measured by the number of complaints reported. But in recent years, very few complaints have been received. Sudden process disruptions in the crackers that results in unplanned flaring do, however, immediately attract the attention of the public and media and can sometimes lead to some concern. This was the case on December 7.

We respond to such incidents as best as possible through local media and our own social and other media channels. In general, Dow's neighbors experience little nuisance, which can be concluded from the community survey conducted in March 2014. A total of 14% indicated being bothered by the flaring. This digital survey is based on a representative sampling of residents in the three Zeeland and Flanders municipalities and in the Municipality of Borsele.

COMMUNITY SURVEY IN TERNEUZEN:  
HOW OFTEN DO YOU EXPERIENCE A NUISANCE?

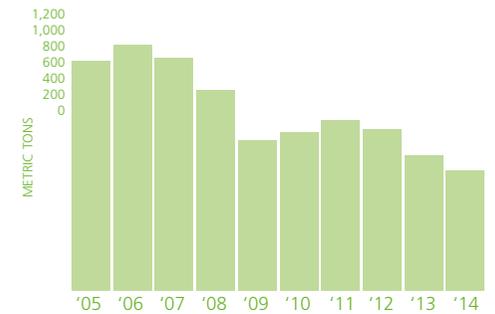


■ Never ■ Occasionally ■ Regularly ■ Often ■ Don't know

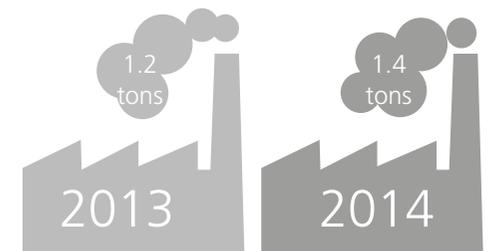
## Emissions

The reduction in the emissions of substances into the water and air has the continuous attention of the industry. This is driven by legislation, permit granting and enforcement on the one hand, and the implementation of a large number of initiatives that have strongly reduced emissions on the other. The Environmental Report, which is drawn up annually and discussed with the regulatory authorities, and the CO<sub>2</sub> Emissions Report serve to monitor the emissions policy. Below is an overview of the results from the 2014 report.

VOC EMISSIONS AT DOW TERNEUZEN



VOC EMISSIONS IN DELFZIJL



## VOC emissions

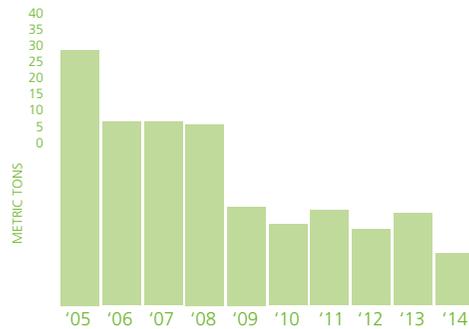
VOC is the collective term for volatile organic compounds. These compounds, primarily ethylene, methane and other hydrocarbons, are released into the atmosphere in various ways.

The downward trend for VOC emissions that started in 2012 remains intact. There is a continuous focus on limiting flare activities as much as possible. Much attention is also devoted to reducing leakage losses of volatile compounds through, for example, pumps, flanges and valves. Fugitive emissions programs make it possible to continuously monitor and measure any losses, so that they can be responded to effectively. During the entire period of 2005–2014, the amount of volatile organic compounds (VOC) in Terneuzen was reduced by 48%.

## Priority emissions

Part of the VOC emissions are priority emissions. These are emissions from such hazardous substances as ethylene oxide (EO), benzene and acrylonitrile, emissions that, like the name says, are prioritized. They are primarily caused by breathing and working losses from storage tanks and by leakage losses. A reduction of 79% has been achieved since 2005. A major step was taken in 2009 with the EO-only project. In recent years, there have been increasing breathing and working losses from storage tanks connected to a scrubber or aligned with a flare. Another important measure is the leakage loss program, which entails pro-actively detecting and repairing leaks.

### DOW TERNEUZEN PRIORITY EMISSIONS



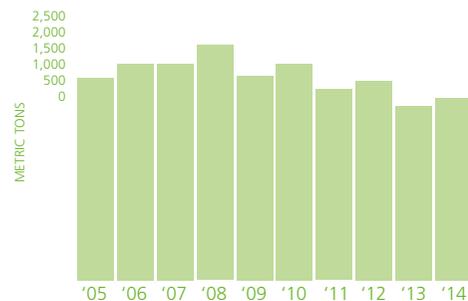
There are no priority emissions in Delfzijl.

## NO<sub>x</sub> emissions

NO<sub>x</sub> are nitrogen oxides that are released during incineration processes; they contribute to the acidification and eutrophication of the environment. NO<sub>x</sub> emissions were reduced by 10% during the period 2005–2014. The NO<sub>x</sub> emissions are closely related to an increasing production volume which, after all, leads to more burning. In spite of numerous projects to generate more efficient incineration, the reduction rate is not satisfactory.

Investments have been made in recent years in rebuilding the cracker 1 furnaces with low-NO<sub>x</sub> burners. These result in cleaner burning. All of the furnaces have now been equipped with these new burners. All the same, NO<sub>x</sub> emissions have increased as a result of higher production. Compared to past years, less steam has been purchased from Elsta and more steam produced in Terneuzen's own boilers, resulting in an increase in NO<sub>x</sub> emissions.

### NO<sub>x</sub> EMISSIONS AT DOW TERNEUZEN 2005–2014



### NO<sub>x</sub> EMISSIONS IN DELFZIJL:

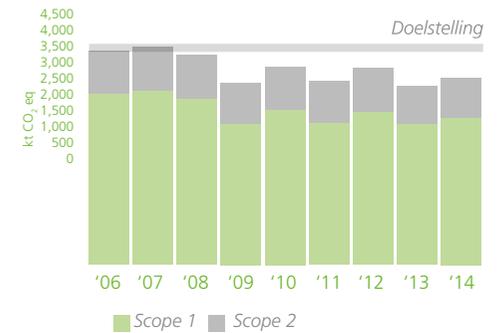


## Greenhouse gas emissions

Greenhouse gas emissions account for the heating-up of the planet. These emissions are expressed in CO<sub>2</sub> equivalents. CO<sub>2</sub> is released during incineration processes. CO<sub>2</sub> is also formed during the production of EO and, in smaller amounts, during the Biox water purification process, as well as during the production of Styrofoam until 2012.

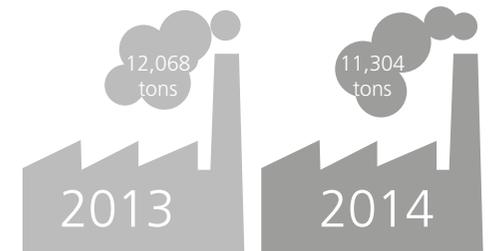
The following graph shows the total greenhouse gas emissions at Dow in Terneuzen. These emissions consist of direct emissions, also called scope 1 emissions, and are released during production processes. The gray section shows the indirect or scope 2 emissions. These result from the generation of steam and power for Dow in the adjoining heat and power station. Total greenhouse gas emissions in 2014 were more than 3.3 million tons, a reduction of more than 13% since 2006.

### GREENHOUSE GAS EMISSIONS AT DOW TERNEUZEN



The scope 1 emissions were obtained from Dow's Global Emissions Inventory (GEI), while the scope 2 emissions are estimated by deducting from the total scope 2 emissions those emissions related to steam and power consumption by Trinseo (previously Styron). This was done for all years. The figures differ from those in the 2013 Sustainability Report because those figures also included Trinseo. For the exact scope 1 and 2 figures, see Appendix 2.

### GREENHOUSE GAS EMISSIONS IN DELFZIJL



Scope 1, in CO<sub>2</sub> equivalents

As can be expected, the CO<sub>2</sub> emissions in Delfzijl are only a fraction of those in Terneuzen. The emissions released here are combustion emissions from the combustion installations, such as the furnaces and boiler. A reduction of 6.3% was achieved in 2014. This is largely the result of lower and more efficient gas consumption.

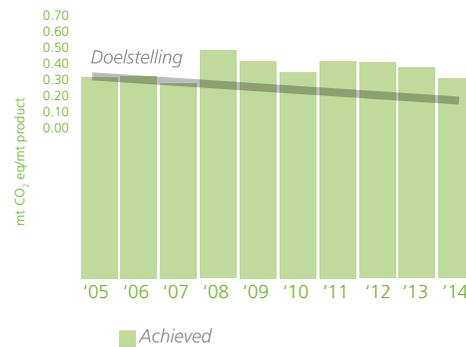


## Greenhouse gas emissions intensity

The relative emissions of greenhouse gases was 0.3% lower in Terneuzen than in 2005. In other words, emissions per ton of produced product have remained practically the same. This can primarily be attributed to the closure of the EB/Styrene 3 and EG plant in 2008. Since the greenhouse gas emissions intensity at these plants was lower than average, the closure of these plants has resulted in an increase in the average intensity. Compared with 2008, the average intensity has decreased by 12%. This has been achieved through

a continuous focus on improving energy efficiency and introducing technological improvements, such as the introduction of an improved EO catalyst that more selectively converts ethylene into EO, resulting in the formation of less CO<sub>2</sub>. In addition, the cracking of lighter input produces not only methane but also high levels of hydrogen. Reuse helps reduce CO<sub>2</sub> emissions, but limits the possibility to capture renewable energy and, consequently, further improve CO<sub>2</sub> intensity.

### INTENSITY OF GREENHOUSE GAS EMISSIONS AT DOW TERNEUZEN (SCOPE 1 AND 2)



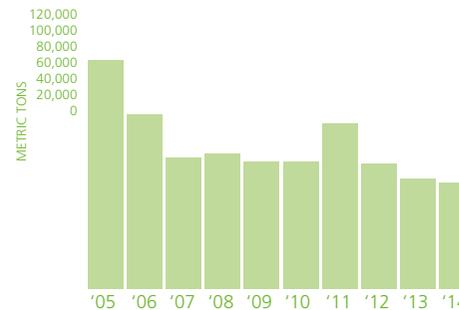
The production data used to calculate intensity are derived from Dow's Global Emissions Inventory (GEI). The definition for generating data in this system differs for some components from how it is reported to the government.

## Waste

A waste reduction of 54% was achieved during the period 2005–2014. This was primarily the result of reducing internal flare losses. Dow's waste reduction efforts are aimed at both internal and external waste processing. The government is primarily interested in a proper and transparent external processing of waste.

The chart below shows how the total waste amount was reduced by 54% during the period 2005–2014.

### WASTE REDUCTION IN TERNEUZEN

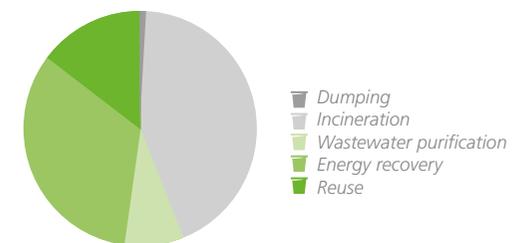


The table below includes waste processed both internally and externally, as well as the total waste amount in 2014.

Processing method	Internal 2014 [MT]	External 2014 [MT]	Total 2014 [MT]
Dumping	0	456	456
Incineration	19,297	688	19,974
Wastewater purification	1,883	1,858	3,741
Energy recovery	1,382	13,923	15,305
Reuse	0	6,867	6,867
<b>Total</b>	<b>22,562</b>	<b>23,792</b>	<b>46,343</b>

Compared to 2013, a further reduction in internal incineration has been achieved. The total amount of waste has changed very little.

The pie chart below shows how the total of internal and external waste offered is divided into various processing methods.



### WASTE IN DELFZIJL



## Water collection and wastewater

Dow Terneuzen collects water from various external sources and of varying qualities. Around 6 million cubic meters each year comes from Belgian polder water and is used as cooling water, around 2.5 to 3 million comes from purified wastewater from Terneuzen and around 5 million each year comes from the collection of fresh water from the Biesbosch.

The total water collection at Dow Terneuzen in 2014 was around 14 million cubic meters.

The infographic in the chapter on water provides more details on how these flows are used.

### VARIOUS WASTEWATER FLOWS AT DOW TERNEUZEN IN M<sup>3</sup>.

	Overflow	Spui via cooling tower	BIOX effluent	Total
2010	24,500	833,403	6,719,576	<b>7,577,479</b>
2011	74,626	881,267	6,486,543	<b>7,442,436</b>
2012	5,334	913,416	5,388,892	<b>6,307,642</b>
2013	14,100	756,854	6,470,973	<b>7,241,927</b>
2014	5,658	662,059	6,094,084	<b>6,761,801</b>

In 2014, much less wastewater could be circulated due to technical problems with organic wastewater purification at the site. The reuse of wastewater for the cooling tower (supplementary) declined to the 2011 level. This was in connection with legionella measurements. As a precaution, less purified wastewater was used to supply the cooling tower. The volume of direct overflow of rainwater to the Schelde was also higher than in 2012.

Emissions to water can be expressed in the emission of Total Organic Carbon (TOC) and nitrogen. The report on the amount of these substances in the wastewater provides a more realistic picture of the resident equivalents (EIs) used in past reports.

### TOC WASTEWATER IN KG THAT IS DISCHARGED INTO THE WESTERN SCHELDT

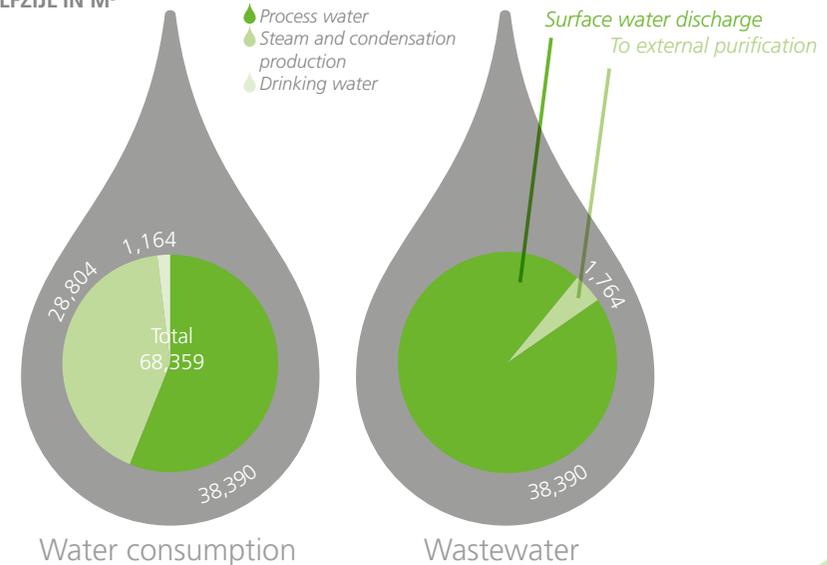
	Overflow	LHC-3 cooling tower	BIOX effluent	Total
2010	1,385	42,930	129,346	<b>173,661</b>
2011	1,425	38,071	113,407	<b>152,903</b>
2012	67	39,912	92,735	<b>132,713</b>
2013	88	37,184	87,451	<b>124,723</b>
2014	62	30,836	100,353	<b>131,251</b>

### TOTAL NITROGEN IN KG THAT IS DISCHARGED INTO THE WESTERN SCHELDT

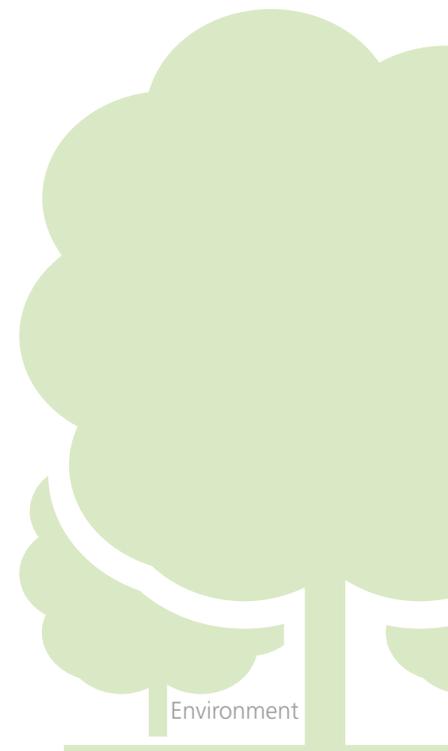
	Overflow	LHC-3 cooling tower	BIOX effluent	Total
2010	169	19,075	42,072	<b>61,316</b>
2011	321	12,700	38,314	<b>51,335</b>
2012	28	10,661	22,107	<b>32,796</b>
2013	3	12,449	28,618	<b>41,070</b>
2014	17	10,358	35,588	<b>45,963</b>

The figures show an increase in the waste content compared to 2013, but a continued decrease compared to previous years. The increase in 2014 was the result of organic water purification problems. These problems were primarily associated with the composition of the silt that makes it possible to carry out optimal cleaning.

### WATER CONSUMPTION AND WASTEWATER IN DELFZIJL IN M<sup>3</sup>



The contamination of the wastewater at Delfzijl is so minimal that discharging can largely take place directly into the surface water.





# ENERGY

AROUND ONE-THIRD OF DOW'S PRODUCTION COSTS ARE RELATED TO ENERGY USE.



## AROUND ONE-THIRD OF DOW'S PRODUCTION COSTS ARE RELATED TO ENERGY USE. AS AN ENERGY-INTENSIVE INDUSTRY, IT IS IN OUR BEST INTEREST TO KEEP ENERGY COSTS AS LOW AS POSSIBLE.

### Energy consumption

The so-called cradle-to-gate energy consumption for the Terneuzen location is around 400 PJ. Around two-thirds of this is in the form of naphtha and LPG, used as raw materials for the crackers. Less than 5% goes to energy storage for the conversion of raw materials into intermediate and end products. Incidentally, this is only a small percentage of total conversion energy at the site. Much of the conversion energy is delivered through hydrogen and methane, which originates during cracking and is reused as fuel. The remaining energy is captured as steam and electricity from the neighboring heat and power station. Dow's total conversion energy was 63.4 PJ (LHV) in 2014. Energy consumption for transporting the raw materials to the plants and for packaging and transporting products from the site is relatively minor (<1%). Due to the high energy consumption level, much attention is devoted to energy costs. These

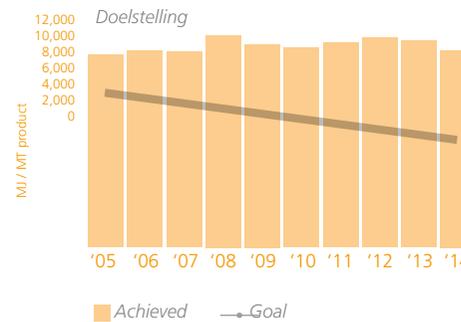
are relatively high in Europe, which has a negative impact on the competitive strength of energy-intensive companies. As a globally operating company, Dow experiences the advantages and disadvantages of the different energy prices worldwide. The advent of shale gas led to a decline in the costs of energy and raw materials in the United States, making it attractive for industrial investments. Dow also invests in new plants in the U.S. In Europe, however, the opposite is the case. High energy costs make the industry here less attractive, resulting in reduced willingness to invest. This is the situation facing an energy-intensive site like Dow Terneuzen.

The drop in oil prices at the end of 2014 has not changed this situation: the effect is different in every sector and depends on, among other things, whether or not the price of the products is linked to the price of oil and the development of market demand.

### Dow's role in the transition to a sustainable society

Dow's strategy is to limit energy consumption in its own production processes as much as possible. The significant improvements in energy efficiency that Dow has achieved since 1990 have largely taken place parallel to capacity expansions or large-scale renovations, making it possible to also introduce the latest technology. Such major investments have not been relevant in recent years.

Without these major investments, possibilities to significantly improve energy efficiency are limited and can only take place in small steps.

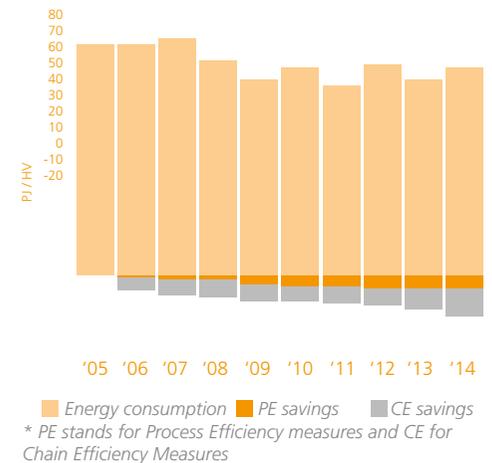


The graph shows that the intensity has not improved compared to 2005. The intensity, however, has decreased by 7% compared to 2008. The increase in 2008 was due to the closure of the EB/Styrene 3 and EG plant. Since the energy intensity at these plants was lower than average, the closure of these plants has resulted in an increase in the average intensity.

Dow's contribution to sustainability efforts is therefore primarily focused on energy savings for customers using our products. An example are the polyalkylene glycols used in synthetic oils that result in a more efficient gear wheel transmission. Another example are our "enhanced performance polyethylenes", ultrathin packaging films that enable material and energy savings.

Thanks to the combination of all measures - in our own processes and in the chain - we succeeded in meeting the 2014 goal established in the Energy Efficiency Plan for 2013–2016. Dow also achieved its internal goal of saving an amount of energy by 2015 that corresponds to 15% of its total energy consumption in 2005. That savings was 18% in 2014.

### ENERGY SAVINGS AT DOW TERNEUZEN



In the Energy Efficiency Plan (EEP), companies establish which measures they plan to implement in the coming period to improve energy efficiency in their own processes and in the chain. The formulation and execution of such a plan and annual progress monitoring are obligations associated with participation in the MEE agreement (multi-year agreement for energy-efficient ETS companies).

At present, Dow does not see sufficient opportunities for producing part of Dow's basic chemicals from biomass. A study conducted together with Suikerunie and Cargill into the possibility to create ethylene from sugar beets showed that this is not yet economically viable.

However, Dow does see numerous opportunities in pursuing joint savings together with other energy-intensive companies. Together with companies in the region, Dow is looking into ways to save energy and raw materials within the Smart Delta Resources Platform (SDR) established in 2012.

The SDR is a joint initiative of eleven energy and raw material-intensive industrial companies in the Delta region. Zeeland Seaports, the Province of Zeeland and NV Economische Impuls Zeeland support this initiative. The participating companies have a joint energy consumption level of around 25% of total Dutch gas energy consumption. This high concentration of energy and raw material-intensive companies and the combination of sectors offers major opportunities for synergy, innovation and joint growth (also see "Innovation with external partners" under Innovation).

### Climate policy

The energy agenda is closely linked to the climate agenda. After all, energy consumption is decisive for CO<sub>2</sub> emissions. Internationally, the goal has been set to limit CO<sub>2</sub> emissions to the point that global temperature rises

by no more than two degrees. The chemical industry in the Netherlands has set itself the goal of achieving a greenhouse gas reduction of 40% compared to 2005. This places high demands on large-scale energy consumers like Dow.

The third trading period of the European CO<sub>2</sub> Emissions Trading System started in 2013. Characteristic of this new trading period is that the free CO<sub>2</sub> rights allocated to companies are based on the performance of the top 10% installations in Europe. This means that companies only receive sufficient free rights to cover emissions for the best performing installations. Extra rights must be purchased for older installations that are less efficient. Rights also need to be purchased for emissions associated with electricity generation.

Since the total European allocation was higher than the previously established industry ceiling with free emissions rights, the European Commission formulated a correction factor in late 2013 for Member States that must adapt to the free allocation of emissions rights. A number of companies, including Dow, submitted an appeal case against this decision to the Council of State. The companies argued that the correction factor was not determined in the correct manner, leading to fewer rights and, consequently, considerably higher costs. This argument has also been raised in other countries. In June 2014, the Council decided that they first wanted to have a number of questions answered by the European Court in Luxembourg.

These preliminary questions pertain to how the European decision was determined and the calculation method used. Only after these questions are answered will the Council of State continue dealing with this matter and make a final determination. This may take some time.

In 2014, however, Dow received financial compensation for part of the emissions associated with electricity generation. This compensation possibility was agreed in the SER energy agreement. Companies participating in the MEE agreement and that fulfill the associated obligations are eligible for such compensation.

Other developments that can have a significant impact on CO<sub>2</sub> costs include the proposed introduction of the Market Stability Reserve. This reserve of emissions rights is intended as a buffer for combatting major fluctuations in supply and surpluses in the trading period that runs until 2030. This has a stabilizing effect, but is also expected to result in a higher price for emissions rights.



# WATER

THE WORLD FACES A CHRONIC SHORTAGE OF SUFFICIENTLY AVAILABLE FRESH WATER.



**TWO-THIRDS OF OUR PLANET CONSISTS OF WATER. YET THE WORLD FACES A CHRONIC SHORTAGE OF SUFFICIENTLY AVAILABLE FRESH WATER. EXPECTATIONS ARE THAT THIS PROBLEM WILL BE INCREASINGLY EXACERBATED. DOW TERNEUZEN PLAYS A PIONEERING ROLE IN SETTING THE AGENDA OF INDUSTRIAL WATER AS PART OF THE ENTIRE WATER CHAIN AND IN THE JOINT DEVELOPMENT OF SOLUTIONS.**

The availability of fresh water in Zeeland is limited. Considering this reality and the necessity to invest in future partnerships for sustainable water management in the region, a project for the reuse of wastewater from the Municipality of Terneuzen was launched. This model for integrated water management ensures the efficient reuse and repeated use of municipal and industrial water, which is used up to three times. Reverse osmosis makes it possible to remove salts, residual humic acids and micropollutants from the water, so that 1.6 million m<sup>3</sup> of demineralized water can be produced and made suitable for industrial use. Including the reuse of Dow's own fresh wastewater, around 5 million cubic meters of

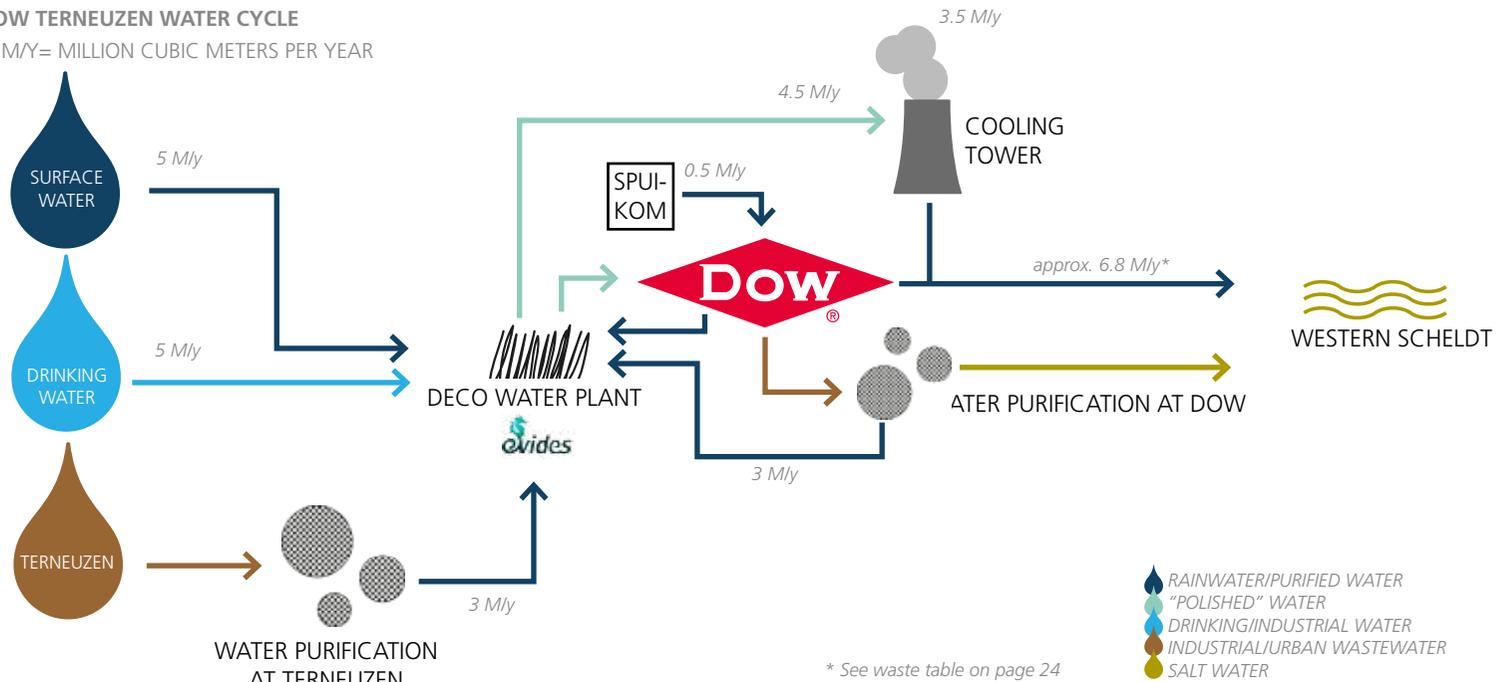
purified wastewater can be reused each year. This project has won various international awards.

Together with our partners - Evides, the Municipality of Terneuzen and the Scheldestromen Water Board - we have succeeded in making a major efficiency improvement during the period 2000–2010. The system currently meets 65% of Dow Terneuzen's fresh water needs.

Experiences with wastewater reuse and the partnership forged to this end turned out to form an excellent foundation for further expanding contacts in the world of water management and launching more initiatives and projects. Various projects have since reached such an advanced stage that we feel it is time to take the next step towards completing the closure of the water cycle from the year 2020.

The infographic shows our current water balance. In closing the water cycle, the most important focus is on finding alternative sources of water, so that scarce fresh water no longer has to be used. In other words, alternative sources for 5 million cubic meters of drinking water are needed. Various projects are also being carried out to further improve the current use of recycled wastewater.

**DOW TERNEUZEN WATER CYCLE**  
IN M/Y= MILLION CUBIC METERS PER YEAR



Dow's goal in terms of water is highly ambitious. To achieve that goal, we aim to:

- Contribute to the self-sufficiency of the region when it comes to the use of fresh water for industrial and other uses, such as agricultural. Consequently, the import of fresh water from the Biesbosch can be reserved for the drinking water supply.
- Further improve the water efficiency in our processes.
- Reduce our dependence on scarce fresh water by treating, reusing and recycling industrial water and source and surface water in our immediate surroundings.
- Enter into partnerships aimed at the better use of water sources and sharing solutions.
- Minimize the discharge of wastewater into the surrounding area.

Concretely, this involves the following projects:

### Robust water system

At Dow's initiative and with provincial support through co-financing, 17 parties entered into a public-private partnership in 2010. Together they examined opportunities and possibilities in terms of water in the Zeeland-Flanders Canal Zone. An integral approach was used to determine the extent to which industry, agriculture, nature, culture, recreation, tourism and the urban area can profit from one and the same water system. The resulting concept, entitled the "Robust Water System", aims to convert threats into opportunities with added value for the region. Furthermore, the system an-



"Water is only on the agenda in 40% of boardrooms," says Cate Lamb, Head of Water in the Carbon Disclosure Project. She was also one of the speakers at the water symposium organized by Dow on September 18 in Scheveningen.

ticipates future developments, such as drier summers and wetter winters. This stocktaking has resulted in a number of projects that are currently being carried out, such as recycling the seepage and polder water that now flows into the Western Scheldt.

### E4Water

This is a European consortium aimed at the development of mild desalination treatments. A pilot project was launched in 2013 to this end at the Evides water plant neighboring the Dow grounds. The use of this mild desalination technology makes it possible to desalinate various types of brackish

water from the immediate surroundings into reusable fresh water. The challenge is to optimize this process so that desalination is a lot more affordable and, consequently, can yield cost savings for Dow as well.

In addition to the technical aspects, the use of alternative water sources also has consequences for the landscape. Thanks to the construction of a "green" infrastructure, the brackish water is collected, buffered and pre-purified prior to the mild desalination treatment, which can benefit the landscape's appeal.

### Water Nexus

This initiative entails a broad research program compiled jointly by the government and industry. More than twenty partners, including Wageningen University, the Deltares knowledge institute, Shell and Dow have combined their strengths and research efforts to find an integral solution for removing micropollutants from a brackish water environment. The goal is to carry out testing in Terneuzen since the environment here is already well defined and the necessary infrastructure available. Water Nexus will help Dow develop and implement on a small scale the final crucial steps in the closure of our water cycle. The intention was to launch the study in 2014 but, due to delays in obtaining the necessary funding of six million euros, the starting date was moved forward to May 1, 2015.

## “Salt water where possible, fresh water where necessary.”

That is the leading principle that connects the parties in the Water Nexus partnership. By taking a closer look together with all parties involved in self-sufficiency at industrial locations and by also confronting students during their studies with realistic “environmental challenges” that emerge, we further develop knowledge and raise it to a higher level.

Personally, I am very much in favor of this form of participatory research because it clearly has a very positive effect on all groups involved. There is simply a great deal of knowledge in the industry. By linking that knowledge with the academic and fundamental side of university, students can become acquainted with genuine challen-

ges during their studies, as well as with the knowledge institutes, government organizations and companies involved in the solutions. Based on this Wageningen philosophy, we work together with numerous parties, including large industrial end users of technology and knowledge like Shell, Unilever and, of course, Dow.

Modern, open, innovative partnerships like the one together with Dow involving water also pave the way for industrial leadership, towards a specific arena in which companies set a social example. I see that Dow has already taken the initiative in the area of sustainable water use and management. I think that is an extremely positive development. I also think it is very interesting that

this is done from Terneuzen. After all, the historical baggage of the Dutch knowledge community on the subject of water and the Dutch mentality - that is shaped by the fact that we always must include everyone in our negotiations and look beyond our own interests - makes it possible for the Netherlands to play a distinctive role in finding these types of solutions. I think it would be quite appealing if Dow Terneuzen were to succeed in putting a Dutch signature to this picture, both within Dow as a whole and beyond. The opposite is often the case. So often, in the Netherlands, we assume someone else’s approach and thereby conform to the same knowledge level as others. But, in this field, we really are the experts.



*Huub Rijnaarts, Professor of Environment and Water Technology, Wageningen University*

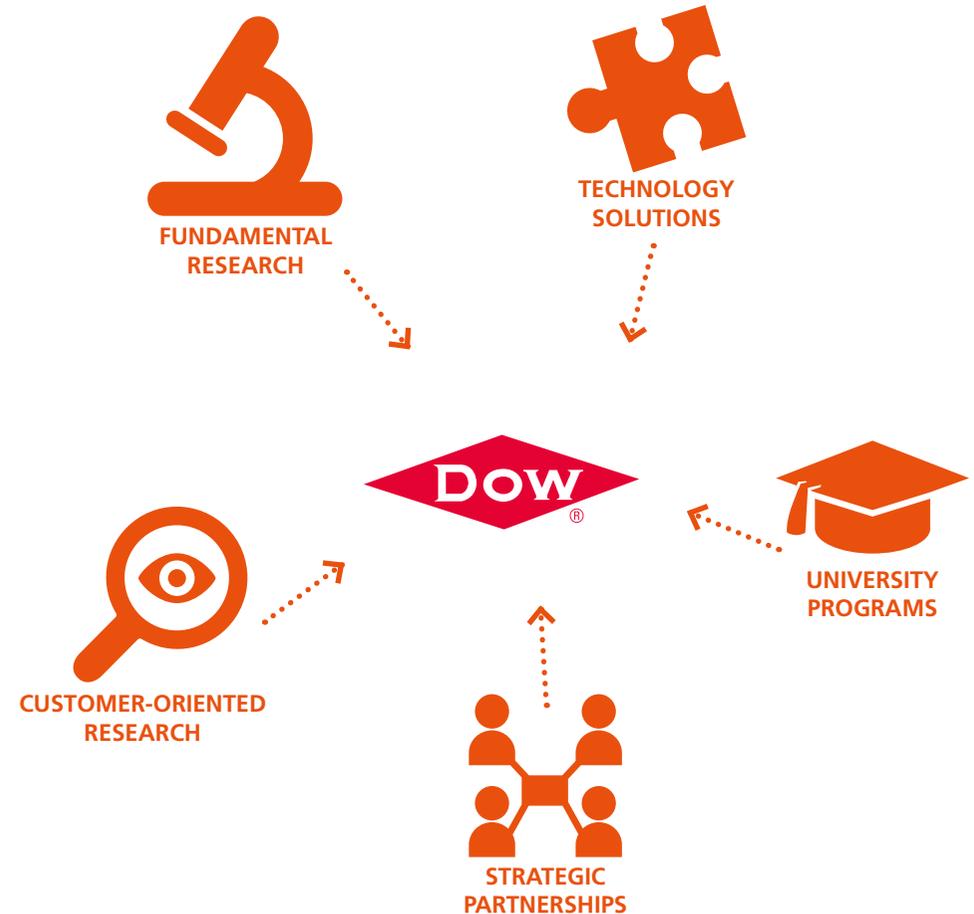
# INNOVATION

DOW IS CONTINUOUSLY INVOLVED IN RESEARCH AND DEVELOPMENT.

DOW IS CONTINUOUSLY INVOLVED IN RESEARCH AND DEVELOPMENT. WORLDWIDE, WE INVEST AROUND 1.7 BILLION DOLLARS IN R&D EACH YEAR. THROUGH INNOVATIONS AND FULFILLING THE SUSTAINABILITY NEEDS OF OUR CUSTOMERS, WE CONTRIBUTE TO SOLUTIONS FOR BROAD SOCIAL ISSUES.

New technological inventions and solutions and sustainable products and production processes can only develop in an innovative climate, in an environment with opportunities for pioneers to look beyond their own borders and, in this way, connect to other branches of science. These "scientists" are essential for Dow's success. This is why we nourish scientific talent and make every effort to promote an innovative climate.

Dow is known for its knowledge and technology in producing chemical building blocks, but Dow has also gradually developed into a supplier of solutions throughout the value chain. Our broad vision of innovation enables us to mobilize our knowledge and technology where these can provide the greatest added value or where innovations can contribute quickly to growth. We achieve this by following several paths at the same time and having different mechanisms interact that can reinforce one another.



From the Benelux, we make an important and distinctive contribution to Dow's innovation and growth. First and foremost, we have our own R&D organization, with more than 200 researchers who contribute to Dow's own inventions and programs for technological developments. Increasing collaborations between R&D, businesses and Dow's business developers result more and more in targeted partnerships aimed at meeting customer needs. In this region, we are effective at forging ad-hoc innovation platforms, partnerships in which the key actors combine their strengths to arrive at innovative solutions. The development of new technology in the area of water is a good example of this.

The Benelux organization also has a strong university program, aimed at stimulating fundamental and applied research. We benefit from the fact that the Benelux region has a high density of top universities and knowledge institutes. We have concrete research and exchange programs with the Universities of Delft, Utrecht, Eindhoven, Ghent and Leuven, among others.

Dow's global award system stimulates innovation and knowledge development within Dow. Sixty-five Dow Benelux researchers received a distinction in 2014 for their contribution to research projects and inventions, a number of which have led to a patent for new applications.

## Working together towards a circular economy

The world faces major challenges in the areas of health, the energy supply, food safety, transport, the climate and raw materials. One possible solution is a transformation to a sustainable or circular economy. A circular economy meets the need for a maximum reuse of raw materials and products and a minimal impact on natural resources. Chemical companies like Dow play an important role in contributing solutions that enable the transition to a circular economy. In Terneuzen, we also have important research capacity and facilities that enable us to make an important knowledge contribution, such as our heterogeneous catalysis laboratory. This unique research lab accelerates research into catalysts for, among other things, the use of green raw materials by a

factor of 50. Within the framework of the Dutch Top Sector Policy, Dow contributes its knowledge in the ISPT, a consortium for the development of process technology that enables us to, among other things, participate in a study into the use of residual heat. What also makes the collaboration in the ISPT so unique is contact with other energy-intensive industries, such as the steel industry. Knowledge about each other's processes has proven to be the key to jointly finding solutions for a circular economy. Familiarization with processes in the steel industry led to a concrete partnership with Arcelor Mittal, just across the border with Belgium and only 20 kilometers away from Dow Terneuzen. Under the umbrella of the Smart Delta Resources Platform (SDR), Dow and Arcelor Mittal jointly research how carbon can be maintained in the process, so that it is not

ultimately incinerated and, consequently, emitted as CO<sub>2</sub>. A possible solution lies in capturing the CO gas released during steel production and subsequently treating and converting this gas into synthesis gas, a combination of CO and hydrogen. This synthesis gas can serve as an alternative raw material for base chemicals.

This concept is now being put to the test jointly at a laboratory scale. A technology platform already exists for the development of the individual steps, such as for converting CO into hydrocarbons. In addition to the further development of the concept, the next goal is to make it economically feasible. And certainly, for the parties involved there is no doubt that a circular economy needs these types of solutions.





## Process innovations

An example of a Dow award-winning project was the changing of the chain transfer agents in the production process at the LDPE plant. This took place after a test phase in the pilot plant. A chain transfer agent (CTA) is added during the process. This is precision work that is handled by the operators. The new chain transfer agent improves the melting index, one of the most important product specifications. In addition, very little is required of the new cta. Moreover, at the end of the process, it produces less residual product - an annual savings of 258,000 kilos - because the substance is more or less completely used during the production process. So this is a solution that is good for the environment, good for our pocketbooks and, equally as important, reduces the workload.

## Solutions for customers

Much of our interaction with customers revolves around finding solutions for a better and cleaner product. A good example of such a solution that is developed in close collaboration with our customers is the quality of our Linear Low Density Polyethylene (LLDPE) for the production of, for example, packaging materials. Our customers asked us whether it would be possible to make a different quality Dowlex\*, a quality that they could process more effectively and cleanly. We spent much time looking for a way to adapt the chemicals used in our Dowlex\* process,

which ultimately led to a polyethylene that, in terms of strength and transparency, is considered of absolute top quality. Thanks to good teamwork between R&D and the technicians in the polyethylene plant, it was ultimately possible to find an adaptation that resulted in an improved neutralization of the catalyst. The adapted polyethylene, called Crystal PE, results in a much cleaner processing of the product at the customer's location, enabling more efficient and cleaner production. The three polyethylene production trains in Terneuzen have now been adapted for the production of Crystal PE, and Crystal products are also now being made at the other production locations in Europe.

Another example is a study into alternative materials for touchscreens in which R&D Terneuzen is involved. The position where a touchscreen is touched is usually sent to the software by a small electrical current. Indium Tin Oxide (ITO) is the transparent and simultaneous electrically conducting material that is currently used for this purpose. But ITO cannot meet all the requirements of current and future electronics, such as flexible touchscreens, so an alternative must be found. R&D Terneuzen has found such an alternative in the form of patterns of silver lines that are so thin that they are invisible to the human eye. First and foremost, this involves creating the right nanoparticles, ones that are small enough and suitable for conduction. The second challenge is to develop a suitable technology for properly deposi-

ting the patterns. This research could be conducted in Terneuzen thanks to the unique combination of a high throughput research laboratory, making it possible for much experimental work to take place at an accelerated rate, plus the expertise of electrospinning available here. Talks are currently taking place with potential customers to see how this research can be applied in a successful product.

## Innovation and growth in the region

In addition to developing fundamental knowledge and technology, both within Dow and in public-private partnerships, Dow Benelux was also the driving force behind the Smart Delta Resources Platform (SDR). With eleven participating companies from Zeeland, West Brabant and across the border in Flanders, the goal of this platform is to arrive at a joint agenda for growth and to strengthen the industrial cluster. To identify these business cases, the year 2014 was primarily used for carrying out an in-depth study and analysis, conducted by ISPT and ECN. This study produced a list of 180 possible projects, which was ultimately reduced to the top twenty most promising projects. These projects will be developed in more detail in the coming period. The research partnership between Dow and Arcelor is a concrete spin-off of the SDR.





# MAKING A SUSTAINABLE DIFFERENCE

COOPERATING WITH ALL OF OUR STAKEHOLDERS.

WE ARE CONVINCED THAT WE CAN ONLY BE SUCCESSFUL AS A COMPANY IF WE WORK TOGETHER EFFECTIVELY WITH ALL OF OUR STAKEHOLDERS.

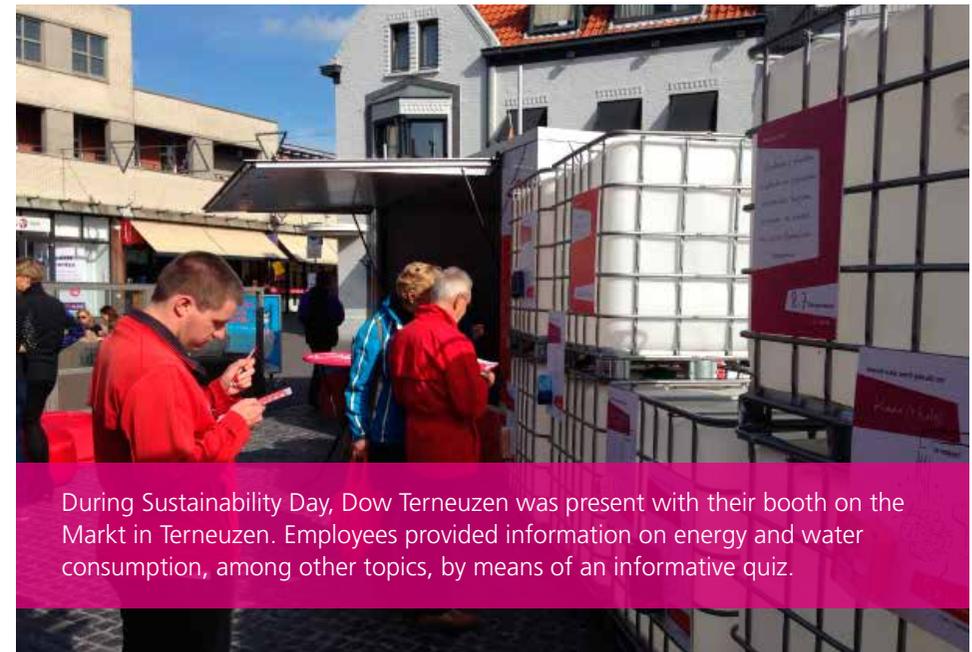
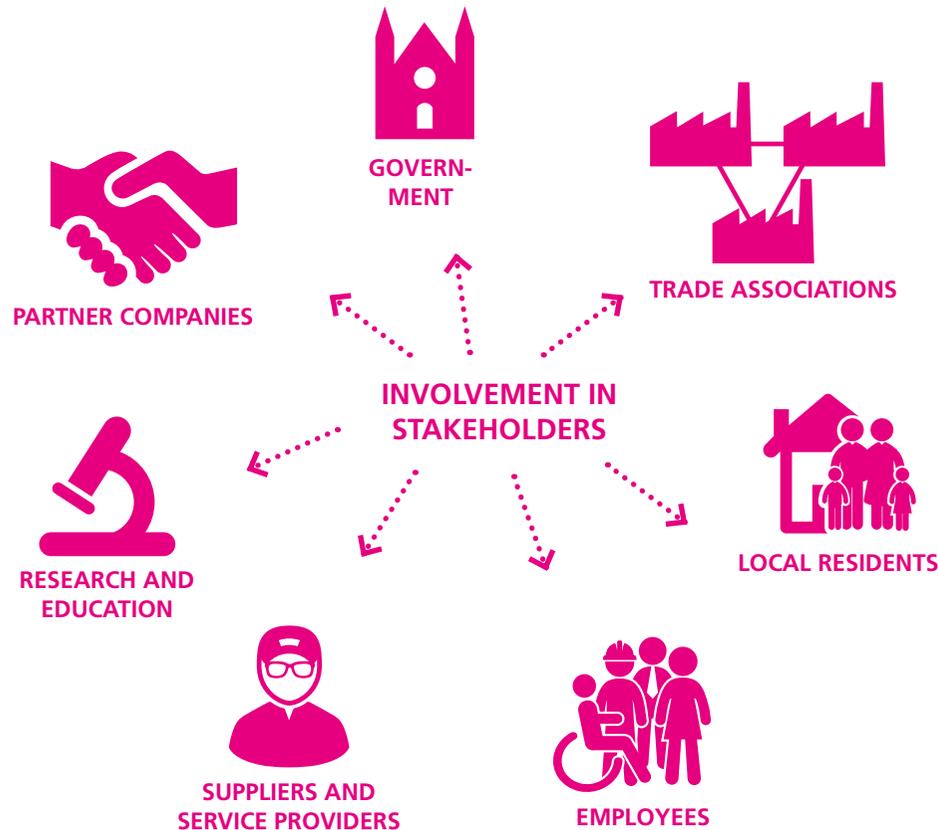
Dow feels very strongly about good consultation with, and the close involvement of all stakeholders. This keeps us focused and enables us to change direction when necessary. Cooperation and dialog take place with a very wide range of stakeholders.

### Contact with the community

Dow actively invests in the local community where its production takes place. We want to act as a good neighbor and to be viewed as such. This is also explicitly included as a goal in Dow's 2015 corporate sustainability goals. Having an active and involved feedback group made up of local residents is considered essential.

For several years now, Dow Terneuzen has approached the feedback function in a different manner. This is also related to recognition of the fact that today's information society demands specific communication tailored to the target group. The use of our communication trailer at events in the region enables us to meet this expectation. The use of the trailer, sometimes in connection with specific themes like "sustainability", lets us enter into closer dialog with groups of local residents.

### Cooperation and dialog



During Sustainability Day, Dow Terneuzen was present with their booth on the Markt in Terneuzen. Employees provided information on energy and water consumption, among other topics, by means of an informative quiz.



How does our local environment view us? This has always been an important question for Dow, which is why it is measured periodically using a global survey. The most recent survey was held in Terneuzen in 2010.

To gain more insight into not only the acceptance of Dow by its neighbors, but also better insight into what is important in the local community in terms of desires and expectations, a more comprehensive community survey was conducted in 2014. An extensive questionnaire was developed to this end together with the VNCI.

### Most important results of community survey

The survey was based on a representative sampling of local residents ages 18 and older in the municipalities of Terneuzen, Borsele, Hulst and Sluis. Carried out by Ruigrok/Netpanel in March 2014.

- 98% is familiar with Dow.
- Most of the surrounding area is positive or neutral towards Dow; 5% of respondents are negative or very negative.
- Local residents are most critical about the designation "environmentally friendly"; 18% of respondents consider it "not appropriate" or "completely inappropriate".
- Most local residents feel that Dow is very accessible. Local residents are most critical about the transparency and completeness of Dow's reporting.

The insights gained from the community survey provide good points of departure for determining the focus of our efforts and communication in our neighborhood. An important insight, for example, was that neighboring residents do not have much need for contact with Dow as long as they can trust that Dow is pro-active and honest about providing information when relevant. The goal is to repeat this survey periodically, so that we can measure whether views have improved and to enable us to respond to changes.

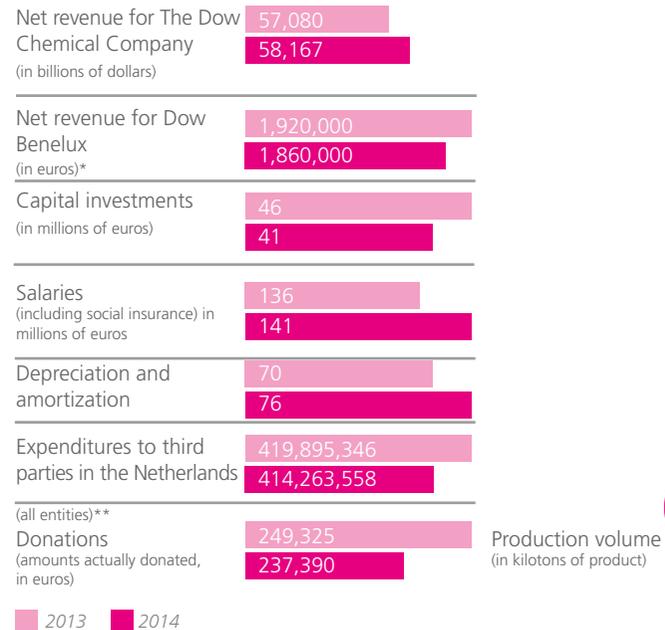
### Research and education

Dow participates in numerous initiatives related to technology promotion and encouraging enrolment in technical study programs. Nationally, this includes awarding chemistry grants, participating in events and promotion days at universities and participating in programs like JetNet and Girlsday. In Zeeland Flanders, we are actively involved in the technical programs at the ROC in Terneuzen, and we also substantially invest in the quality of the programs, for example, by co-developing the curriculum, offering internships and organizing working visits and guest lectures.

### Economic impact

Dow has an economic impact on its surroundings through its own expenditures, such as salaries and purchasing (see table). Our activities enable us to create economic activity and therefore jobs, for example, at our suppliers and subcontractors. Consequently, it can be said that Dow's economic impact in the Benelux is relatively large. Every Dow job at a production location is estimated to create three to four indirect jobs.

#### DOW BENELUX RESULTS



\* Note: A different basis than GAUR was used for reporting on production volume at Terneuzen. GAUR does not report products derived from the crackers, whereas this is reported in the production figures on which the permit is based. This is partly why total production volume is considerably higher than the 4.6 million tons of products reported last year.

# Important employer

When it comes to employment, Dow plays a leading role in our region. Dow's direct and indirect influence is tremendous, both economically and socially.

The development of the BPSC is a great example of this. We couldn't be luckier. A company that grows from ninety to six hundred employees over four years during an economically difficult time is every mayor's dream. The BPSC is also important because it offers a different type of employment than the technical companies that are so plentiful in this region, work that attracts more women and young people with an international background. These types of jobs are very welcome here.

Dow is also an important pioneer in terms of new economic dynamics. The Maintenance Value Park is a good example of this. Maintenance companies, industrial companies, educational institutions and knowledge institutes have combined their strengths, with Dow as the driving force. They share knowledge and work together intensively. This has resulted in a hotspot for high-quality maintenance, a breeding ground for innovation. On the one hand, this is achieved through the development of a park, where companies are all located under one roof. On the other hand, it is the result of the expansion of the knowledge and innovation center. The ultimate result is a higher maintenance level!

The accessibility of the Terneuzen harbors has increased significantly with the construction of the Sluiskil Tunnel. And the widening of N62 Tractaatweg and construction of the Nieuwe Sluis will make the region even more attractive. This will offer new opportunities for both existing and starting companies, And therefore new opportunities for Dow and its contractors.

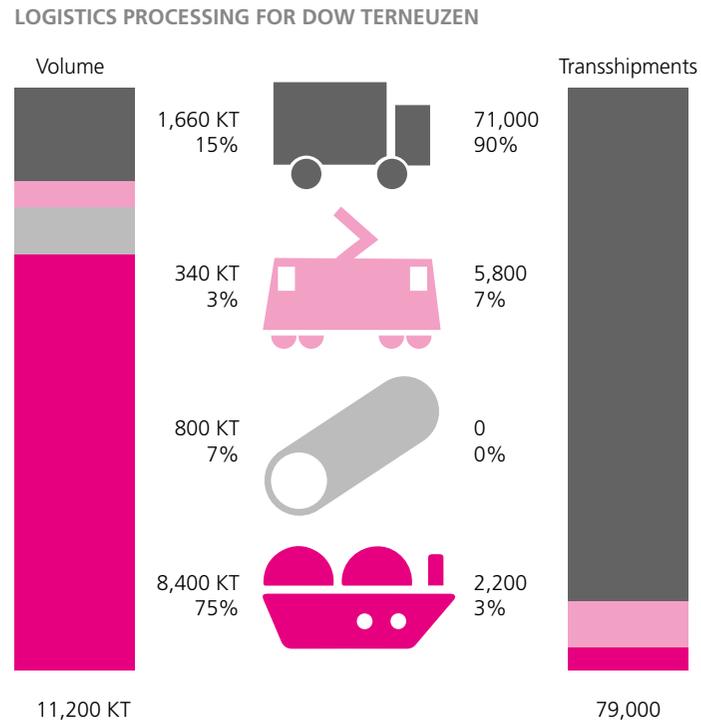
*Mayor Lonink, Municipality of Terneuzen*



MAYOR JAN LONINK OPENED THE NEW BPSC OFFICE LOCATION IN TERNEUZEN ON APRIL 1.

## Logistics and transport

Dow's logistics organization processes around 12 million tons of products each year (counting all in- and out-transport). This primarily involves Dow raw materials and products, but also includes services carried out for customers like Trinseo. Around 6.5 million tons are received annually for processing and around 5.5 million tons are sent out. This adds up to a total of around 110,000 transshipments via various modes of transport: road, rail, pipeline and water. The Dow volume per mode of transport (left) and number of transshipments/movements are shown here.



# OUR PEOPLE

THINKING AHEAD AND IN TERMS OF SOLUTIONS.



## OUR PEOPLE THINK AHEAD AND IN TERMS OF SOLUTIONS. THEY ARE ESSENTIAL TO TRANSFORMING OUR AMBITIONS INTO TANGIBLE RESULTS.

In its global personnel policy, Dow endeavors to be the best possible employer. This goal is pursued by means of a strategic HR policy, with the following focal areas:

- Acquisition and retention of a diverse population
- Committed and involved employees
- Promoting a performance culture
- Excellent leadership

Dow measures progress in these areas by means of an annual employee satisfaction survey: the Global Employee Opinion and Action Survey (GEOAS). The worldwide scores are benchmarked with the results of top employees in the Mayflower Group.

### Workforce and formation

On December 31, 2014, Dow Benelux had 1,945 employees. In addition to permanent Dow employees, 438 people were employed through temporary employment agencies (contingent staff). The Business Process Services Center (BPSC), a separate entity alongside Dow Benelux, had a staff of 578.

Our values and approach are established in Dow's global code of conduct, the Diamond Standard, which provides guidelines for the honest and responsible conduct of all employees. Employees are provided with online tools to make them more aware of desirable behavior and are trained in recognizing the opposite types of situations: undesirable behavior, conflict of interests and unacceptable practices. Employees personally sign the code each year. An Ethics line is also available worldwide. In all communication and support involving the Diamond Standard, employees are encouraged to take personal responsibility and to report any matters that conflict with the Dow code of conduct.

### Goals and results

After the GEOAS in 2013, various measures were initiated to further improve employee satisfaction and involvement. This included Leadership Engagement training, where the focus was on promoting even greater awareness of what matters to people and how to enter into a dialog about this. The Ready to Move program has also been continued, resulting in better opportunities for the professional development of employees. Managers have also received training in recognizing and dealing with stress among employees. Another focal area that arose from the results of the GEOAS is strategic alignment: the degree to which employees are involved in Dow's strategy.

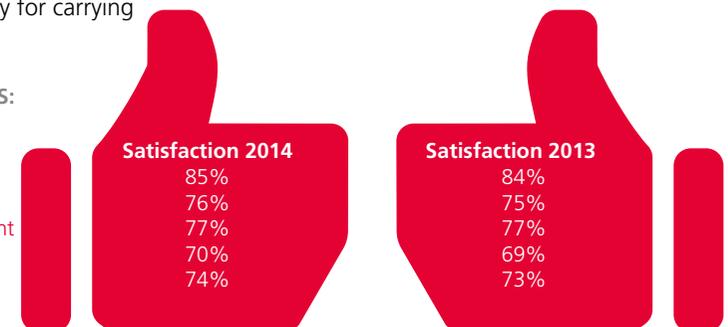
In September 2014, 83% of employees completed the GEOAS.

One aspect of safety, health and the environment, for example, was safety awareness and no fewer than 99% of employees stated feeling a sense of responsibility for carrying out their work safely.

### THE MOST IMPORTANT SCORES:

#### Section

- Performance Management
- Diversity & Inclusion
- Safety, Health and the Environment
- Strategic Alignment
- Job Satisfaction



### Successful cooperation in diverse teams

Employees of more than 40 different nationalities work at Dow and BPSC. Dow has developed a number of ways to stimulate its employees to work together effectively, creatively and respectfully within an open and diverse structure. Diversity covers such aspects as differences in education, national, cultural or socio-economic background or hiring people with a physical handicap or different sexual orientation. Dow is convinced that diversity in the workplace is worthwhile and feels strongly about stimulating this. Managers play an important role in promoting diversity. To increase their awareness, a training workshop was offered in 2014, which was attended by 90% of managers.

The number of women in the organization has risen slightly (from 18% to 20%), but is still increasing at a slower rate than desired.

# Top Sector Chemistry Grant

Dow is sponsoring me with a Chemistry Grant during the first year of my Chemical Technology studies in Eindhoven. Thanks to the 500 euros a month in grant support, I can focus fully on my studies. That is also the intention with this funding, since you can only receive the grant during the second and third years if you achieve a grade point average of 7.5 (on a scale of 1 to 10) for the first year.

But, above all, it is a fantastic opportunity to come into contact with a company and get a look behind the scenes. On the other hand, I get to promote Dow at the university. For this aspect, I'm in frequent contact with

Dow's university team. I recently spent a day at Dow. What struck me most was the atmosphere. It was extremely laid-back, not at all what I had expected. Of course, it's hard to know these things from the outside. But, once you're there and step inside a regular office, you get a very good idea about what it means to work at Dow. And that makes it all a little more real. I can definitely see myself working there, so it's certainly a good source of motivation for studying hard.

*Noortje Donkervoet, Chemical Technology student with a Top Sector Chemistry Grant*



IN ADDITION TO THE NATIONAL CHEMISTRY GRANTS (SEE TEXT IN BOX), DOW ALSO PARTICIPATES IN THE FRIENDS OF UCR PROGRAM. THIS PROGRAM SUPPORTS INTERNATIONAL UCR STUDENTS IN MIDDELBURG. IN ADDITION TO A UCR GRANT - PRESENTED HERE BY ARND THOMAS - COMPANIES IN THE REGION ARE INVOLVED IN THE DEVELOPMENT OF THE STUDENTS' UNIQUE TALENTS

**ERM Certification and Verification Services (ERM CVS) was engaged by Dow Benelux (Dow) to provide assurance, as described below, in relation to the Dow Benelux 2014 Sustainability Report (the Report).**

### Our opinion and our conclusions

In our opinion, based on our activities, the total 2014 Scope 1 Greenhouse Gas (GHG) emissions for the Netherlands, as shown with \*\* on page 45, are fairly presented, in all material respects, with the reporting criteria.

Based on our activities, nothing has come to our attention to indicate that the 2014 data for the selected indicators, as shown with \* on page 45 in the 2014 Dow Benelux Sustainability Report, are not fairly presented, in all material respects, with the reporting criteria.

### Our assurance activities

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

- A review of the internal environmental reporting guidelines, including the Global Emissions Inventory (GEI) Global Standard and the Global Asset Utilization Report (GAUR) as well as the conversion factors used.
- An analytical review of the data from the Dow Benelux locations in the Netherlands (Terneuzen and Delfzijl) and seeking explanations for data trends and anomalies where required.
- A visit to the offices of Dow Benelux in Terneuzen (the Netherlands) where we performed the following activities:
  - A review of the data management system and internal review processes used for collecting, consolidating and reporting the 2014 data.
  - Interviews with relevant staff and review of samples of underlying source data for the selected indicators.
  - A review of the consistency of all data covered by the scope of our engagement, in comparison with other reports to the authorities, including the results of audit reports in relation to emission trading.
  - A review of the completeness and the accuracy of the calculations and the data consolidation.
- A review of the presentation of the disclosures and the accompanying explanatory notes for the selected indicators in the

Dow Benelux 2014 Sustainability report to confirm consistency with our knowledge and understanding.

For the Scope 1 GHG emissions, we also reviewed the consistency of the data with the data in the independent 2014 EU-ETS audit reports.

### 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.

Original signed by  
Jennifer Iansen-Rogers,  
Head of Report Assurance  
26 June 2015

*ERM Certification and Verification Services, London*

### Engagement Summary

<b>Scope:</b>	Whether the 2014 data for selected indicators, as shown with * or ** on page 45 in the Report, are fairly presented, in all material respects, with the stated reporting criteria.
<b>Reporting Criteria:</b>	Internal indicator criteria developed by Dow and described in the relevant performance sections. For GHG emissions, Dow uses the WRI/WBCSD GHG Protocol.
<b>Assurance Standard:</b>	ERM CVS' assurance methodology, based on the International Standard on Assurance Engagements (ISAE 3000).
<b>Assurance level:</b>	For the Scope 1 GHG emissions our engagement was designed to obtain a reasonable level of assurance. For the other selected indicators our engagement was designed to obtain a limited level of assurance. The procedures undertaken to obtain a limited level of assurance are aimed at determining the plausibility of information and are less extensive than those for a reasonable level of assurance.
<b>Respective responsibilities:</b>	Dow Benelux is responsible for preparing the Report and for the collection and presentation of the information within it. Our responsibility is to provide assurance in relation to the agreed scope based on the assurance activities performed.



	<b>TERNEUZEN</b>	<b>DELFIJL</b>	<b>TOTAL FOR THE NETHERLANDS *</b>	
<b>PRODUCTION VOLUME (IN MTON)</b>	5,877,552	128,784	6,006,336	
<b>PERSONAL SAFETY</b>				
INCIDENT RATE	0.06	0	0.06	*
PROCESS SAFETY INCIDENT	1	0	1	*
LOPC	6	0	6	*
OTHER COMPLIANCE	1 VIOLATIONS	0	1	
<b>EMISSIONS (IN MTON)</b>				
VOS EMISSIONS	518	1.4	519.4	*
PRIORITY EMISSIONS	7	N/A	7	
NO <sub>x</sub>	1711	6.2	1717.2	*
<b>CO<sub>2</sub> EMISSIONS (IN MTON)</b>				
SCOPE 1/ DIRECT EMISSIONS	2,676,759	11,304	2,688,063	**
SCOPE 2 / INDIRECT EMISSIONS	651,000	6,535	657,535	*
TOTAL CO <sub>2</sub> EMISSIONS	3,327,759	17,839	3,345,598	
<b>ENERGY CONSUMPTION (IN PJ)</b>				
	63.4	0.059	63,459	
WASTE	46,343	541	46,884	*
WASTEWATER	6,761,801	40,154	6,801,955	*
WATER CONSUMPTION (IN M <sup>3</sup> )	APPROX. 21 MILLION	68,359		

\* and \*\* fall under external verification: see page 44.



**BPSC:** Business Process Services Center

**BRZO companies:** Companies subject to regulations and supervision in accordance with the Major Accident Risks Decree (BRZO)

**CO:** Carbon monoxide

**CO<sub>2</sub>:** Carbon dioxide

**ECN:** Energy Research Centre of the Netherlands

**EEP:** Energy Efficiency Plan

**EH&S:** Environment, Health & Safety  
Referred to in Dutch as: veiligheid, gezondheid en milieu.

**EO:** Ethylene Oxide

**EMEA:** Europe, Middle East, Africa and India

**ERP:** Enterprise Resource Planning is a process that enables companies - mostly production companies - to manage their operations in an integrated manner. ERP integrates such functions as planning, purchasing, stocktaking, sales, marketing, finances, Human Resource and so on.

**GAUR:** Global Asset Utilization Registration

**GEOAS:** Global Employee Opinion and Action Survey

**GEI:** Global Emissions Inventory

**GIRD:** Global Incident Registration Database

**High Throughput research:** research that makes large-scale repetition feasible. Terneuzen has a High Throughput laboratory (HTR lab) where complex experiments can take place at a highly accelerated rate.

**ISPT:** Institute for Sustainable Process Technology. A partnership between industry, universities and knowledge institutes aimed at accelerating innovation processes, but with greater efficiency.

**CE:** Chain Efficiency

**LHC:** Light Hydrocarbons

**LOPC:** Abbreviation for "Loss of Primary Containment". An indicator for product leakage.

**LLDPE:** Linear Low Density Polyethylene. Type of polyethylene production that takes place in Terneuzen, along with Dowlex™.

**MEE:** Multi-Year agreement for Energy-efficient ETS companies. Agreements between the large-scale manufacturing industry and the government on energy-saving measures.

**MDI:** Methylene Diphenyl Diisocyanate. Isocyanate that can be converted into polyurethane through a reaction with polyol.

**NO<sub>x</sub>:** Nitrogen oxide

**ODMS:** Operating Discipline Management System

**OSHA:** Occupational Safety & Health Administration. American government agency aimed at improving working conditions that has developed criteria for, among other things, incidents.

**PE:** Process Efficiency

**PJ:** Petajoule. Energy unit that is equivalent to 10<sup>15</sup> joules.

**PSI:** Process Safety Incident (also called Process Safety Code Incident). Incident that must be reported according to the definitions of the American CCPS (Center for Chemical Process Safety).

**Reach:** Registration, Evaluation and Authorization of Chemical substances

**Scope 1 emissions:** Direct emissions originating from own processes

**Scope 2 emissions:** Indirect emissions associated with the amount of purchased or otherwise generated energy

**SDR:** Smart Delta Resources Platform. Cross-sectoral industry platform in the southwestern Delta region (Zeeland, Brabant and Flanders).

The goal of the platform is to develop business cases for sharing surpluses and jointly pursuing energy improvements. The platform was established in 2013, partly at the initiative of Dow, to find solutions for competitive pressure, largely due to high energy prices.

**VOC:** Volatile Organic Compounds

**CHP:** Combined Heat and Power system