Chemical Week

Sustainability Awards 2020 |Shortlist

Best Sustainable Product

- Dow Europe GmbH
- Dow Performance Silicones
- Dow Chemical
- Eastman
- NOVA Chemicals
- Reliance Industries Limited
- Dupont

Best Sustainable Initiative

- Braskem SA
- Diversey
- Dow
- Genomatica
- Reliance Industries Limited
- Shell Chemicals
- UBQ Materials

Best Sustainable Program

- Croda
- Dow
- FMC Corporation
- Ineos Styrolution
- NOVA Chemicals
- Royal DSM
- Wacker Chemie

Chemical Week's Sustainability Awards - Curtain Raiser

BEST SUSTAINABLE PRODUCT

Dow Europe GmbH

Around 30 million mattresses are discarded in Europe each year, and most of them end up in the landfill or incineration. Through the RENUVA™ Mattress Recycling Program, **Dow** aims to reduce this mountain of waste by giving polyurethane (PU) foam from end-of-life mattresses a new life and enable a circular economy for polyurethanes. The post-consumer PU foam will be converted to new raw materials by chemical recycling. The resulting RENUVA™ polyols will be the first polyols product on the market containing app. 50% recycled content. RENUVA™ polyols can be used to produce new PU products and even to make new mattresses.

Judges' comments: *"This is an exciting innovation that incorporates life cycle analysis with value chain benefits of recycling old mattresses. The innovative process has the scalability of turnkey installation and process. It also incorporates environmental benefits to reducing greenhouse gas emissions from landfill or incineration alternatives, embedding circular economy principles."*

Dow Performance Silicones

The rapid growth towards drivetrain electrification is revolutionizing sustainability in mobility and transportation. By working closely with key OEMs, **Dow** materials scientists translated the thermal management needs of high performing EV designs to tailored product properties. DOWSIL™ TC-5515LT Thermally Conductive Gap Filler delivers a combination of high thermal conductivity and low density with a soft, conformable mechanical property profile, along with validated thermal and physical stability to enable efficient battery thermal management. A step-change in performance features, the product offers significant benefits for sustainable transportation.

Judges' comments: *"Interesting enabler for more efficient EV batteries (thermal properties, weight saving). Relevant innovation with immense growth opportunity."*

Dow Chemical

Ultraviolet (UV) actives and Sun Protection Factor (SPF) boosters are essential in Suncare formulations to block harmful UV radiation. However, they face heightened regulatory scrutiny due to health and environmental concerns. **Dow**'s breakthrough product, SunSpheres™ BIO SPF Booster, is an innovative, biodegradable, and highly efficient solution to minimize the environmental impact of Suncare products while maximizing skin protection. SunSpheres™ BIO addresses this challenge. Not only does it double the SPF efficiency of the leading market offerings enabling enhanced sun protection with much fewer UV actives, but it also boasts excellent sustainability attributes including readily biodegradability and 100% renewable carbon content.

Judges' comments: *"This is an exciting innovation in skincare that eliminates the use of microplastics. It illustrates a demand-driven response to consumer awareness."*

Eastman

Many companies are talking about advanced recycling technologies, but they are often years away from being at scale or limited to recycling one or two types of plastics. **Eastman** is giving plastic infinite-life through its carbon renewal technology (CRT). Eastman's CRT approach can recycle virtually any waste plastic, and the technology is in production and at scale right now. If you could recycle materials infinitely, common sense suggests there would be little to no waste. After all, if you can reuse the same materials instead of making new ones, that's a win/win.

Judges' comments: *"Breakthrough innovation and game-changing conceptual re-framing of resource circularity – this application is an excellent example of process innovation."*

NOVA Chemicals

A large portion of flexible packaging is made with biaxially-oriented polypropylene (or biaxially-oriented polyethylene terephthalate) consisting of a biaxially multilayer film, laminated to a blown-film polyethylene sealant web. The major drawback of these mixed material laminates is that they are not easily mechanical recycling. **NOVA Chemicals** recognized the market need for a high-density PE explicitly designed for biaxial orientation and invented it. Biaxially oriented films offer significant performance enhancements in overblown films. Bringing the two together represents a game-changing opportunity to advance the circular economy and help brand owners reach their packaging sustainability goals.

Judges' comments: *"A promising innovation. This product could make a big difference – common product, a clear benefit to sustainability."*

Reliance Industries Limited

Fashion is the second most polluting industry in the world. Well-informed consumers are demanding sustainable apparels delivering on wellness & performance, transparency & traceability, and superior quality. **Reliance Industries** R|Elan™ GreenGold converts waste-to-wealth by recycling post-consumer-waste PET bottles. GreenGold is one of the lowest carbon footprint fibers, offering transparency, and traceability up-to bottle collection. It has substantial water saving credentials and specially-engineered variants for inherent wellness & performance. GreenGold is one of the lowest carbon footprint fibers, offering transparency and traceability up-to bottle collection; has substantial water saving credentials and variants engineered for inherent wellness & performance.

Judges' comments: *"Big opportunity for the apparel area with Oekotex certification and unique way to collect more plastics in India. A strong concept with quantified benefits."*

DuPont

DuPont™ Sorona® is OEKO-TEX® Standard 100 Certified, and a USDA certified bio-based, high-performance polymer. The product can replace nylon-6 in applications such as carpet and garments, including swimwear and activewear. Production of the fibers uses 37% annually renewable plant-based ingredients by weight, while its manufacturing uses 30% energy and releases 50% less greenhouse gas CO2 emissions than nylon-6. The polymer fibers offer unique benefits for the apparel and textile industry, minimizing the impact on the environment without sacrificing quality and performance.

Judges' comments: *"A concise and well-constructed application that provides sufficient quantifiable data on environmental and sustainability benefits. I love the range of products, meeting OEKO-TEX certifications, and the use of biomass."*

BEST SUSTAINABLE INNITIATIVE

Braskem SA

Currently, **Braskem** is the largest producer of biopolymers globally and the only petrochemical company that produces bio-based plastic from sugar cane, which contributes to reducing the emission of greenhouse gases, as it captures carbon dioxide. The company launched I'm green™ -bio-based plastic produced from a renewable raw material, sugar cane -10 years ago, proof of Braskem's commitment to Low Carbon Circular Economy. The company has continued to invest in capacity expansions and now offers the I'm green™ line worldwide. In addition to the biobased product, the portfolio now recycled resin-based, and bio-based & recycled-based products.

Judges' comments: *"Excellent example of the value of LCA and co-benefits of biopolymers beyond carbon emissions to include value-based use of degraded lands. A great example of quantifying GHG avoidance through life cycle analysis."*

Diversy

Although simple handwashing with soap is one of the most compelling and economical ways to prevent diarrheal diseases and pneumonia, and now Covid-19, yet 2.5 billion people worldwide lack access. **Diversey**'s Soap For Hope program helps 1) save lives, 2) enhance livelihoods, and 3) reduce waste. Diversey collects the used soap from hotels, transports them to the local community, and teaches the local people to recycle the soap using a customized machine developed by Diversey. The hotel, Diversey, or other donors then buy back the reconstituted soap bars from the villagers, which are then re-distributed back into the community.

Judges' comments: *"Elegant in its simplicity and with multiple human and environmental benefits (Business model for the poor, saving resources, social progress, increasing hygiene and income, big in scale, strong partnerships). This type of initiative should become a hotel industry standard!"*

Dow

In Brazil, **Dow** developed Recycling for a Change alongside Boomera, a circular economy company, and Fundación Avina, a local NGO. Launched in January 2019, Recycling for a Change is transforming an underdeveloped, yet crucial, link in Brazil's waste management chain—waste pickers. The project's goal is to support the thousands of waste pickers in the community who collect and separate waste, and ultimately provide raw materials for recycling companies.

Judges' comments: *"Very relevant initiative with the potential to grow and impact the lives of a large group of people. Plastic waste is a fundamental global challenge to be tackled, especially in countries without recycling infrastructure; empowerment of local community essential."*

Genomatica

Genomatica is commercializing bio-based versions of multiple widely-used chemicals, slashing their environmental footprint. The company's initiative is a multiplier for the sustainability initiatives of traditional chemical and product makers, as entire value chains reduce their impact by switching to renewable-sourced produced-by-fermentation ingredients. Genomatica's technologies have the potential to reduce over 100 million tons of greenhouse gas equivalents per year, as they reach broad deployment. The company's bio-BDO is commercial (e.g., Novamont's 30,000 metric-ton/ year plant), with 7 million tons/year potential savings upon broad adoption. It's Brontide BG, also commercial, and the company is commercializing bio-nylon-6 (>30M tons), with more coming.

Judges' comments: *"Synthetic biology developed to the point that bio-based intermediates are a becoming a potential reality. An impressive example of the power of partnerships and influence within the industry to shift to more sustainable sourcing of core materials for everyday products."*

Reliance Industries Limited

In 2017, **Reliance Industries Limited** commissioned the world's largest Refinery Off-Gas Cracker (ROGC) with a unique raw material – off-gases from the refinery. These off-gases were previously burnt as fuel for several years and were up-graded to produce more than 1.6 MMTPA of ethylene and propylene. These olefins were used in downstream plants to make raw materials for industrial applications, including mono-ethylene glycol, polyethylene, and polypropylene. The company developed a flow-scheme to ensure olefin production at significantly lower energy consumptions. The process recovers significant quantities of hydrogen, reducing the GHG footprint associated with on-purpose hydrogen production.

Judges' comments: *"Impressive work to use off-gases to produce downstream value-added products at scale… RIL technology has set a new benchmark in petrochemical-refinery integration in a country with a lot of pollution challenges."*

Shell Chemicals

Shell Chemicals is driving a circular economy for plastics through chemical recycling technologies. Shell has the bold ambition to use one million tons/year of plastic waste in its global chemical plants by 2025, starting at its Norco plant in Louisiana, in the United States in November 2019. The new "circular" chemicals produced using this process maintain the original product performance characteristics and specific material qualities of their virgin counterparts regardless of recycled content as feedstock. This process makes resulting resins ideal for high-performance applications where traditionally recycled or "down-cycled" materials are not suitable.

Judges' comments: *""Closing the gap between mechanical recycling and energy recovery (or even landfilling). Chemical recycling is an essential building block of a circular economy. Issue: high amount of energy needed. Good case."*

UBQ Materials

The untapped potential of trash has long been a focus of environmentalists who understand the linear economy model of disposable products is no longer sustainable. **UBQ Materials**' advanced conversion technology transforms common household waste into a sustainable, recyclable, bio-based material that replaces conventional plastics to manufacture everyday products. By diverting landfill waste, UBQ prevents the subsequent decomposition into methane and other toxic emissions from polluting the atmosphere. For every ton of UBQ™ material produced, preventing 11.7 tons of CO2 equivalent from polluting the environment. To maximize impact, the company is embarking on an aggressive global expansion plan.

Judges' comments: *" Responding to a base issue and trying to eliminate the lowest level of the waste hierarchy (landfilling). A completely innovative concept to convert organic household waste into sustainable bio-based material that's clean, recyclable, and cost-effective."*

BEST SUSTAINABLE PROGRAM

Croda

Since its formation in 1925, sustainability has been at the core of **Croda**'s business due, in large part, to the natural origin of its raw materials. In 2019, almost 100 years later, 63% of the company's organic origin raw materials were bio-based, coming from renewable crops and biotechnology. For the first time in our 97-year history, Croda has set ambitious 10-year, non-financial targets and KPIs. To become Climate Positive, the company will continue to reduce its carbon footprint and increase bio-based raw materials use, enabling its customers and consumers to save more carbon than Croda emits via its operations and supply chain. The company's product will avoid four times the carbon emissions associated with our business, our 4:1 carbon cover by 2030.

Judges' comments: *"Very ambitious program and commitments, covers all three elements of sustainability. Smart [solutions] to improve lives- [the company] really means [what it reports]; report stands out."*

Dow

Dow produced its first annual sustainability report in 2003 and has increased the level of transparency since. The company uses the GRI Standards as its overall framework for disclosures. Dow was an early adopter of the GRI Standards Comprehensive reporting option, and it has received limited external assurance of the report. In 2019, the company created an ESG steering team to bring a multi-functional approach to managing what and how it carries out it is reporting. Through this team, Dow can apply a continuous process of capturing input from a much broader set of stakeholders on ESG information usage, assessing gaps in its disclosures existing disclosures, and making recommendations for either additional disclosure or changes to actual operations.

Judges' comments: *"Global mega-player with emerging greener performance targets across multiple business lines."*

FMC Corporation

In the last decade, **FMC** has transformed itself into a top tier agricultural sciences company. During this period, its sustainability report has earned the company broad recognition. In addition to detailed environmental, social, and Governance (ESG) disclosures and educational topics in the report, FMC's sustainability report describes its progress on various environmental, social, and governance topics material to the agriculture industry. The report meets the GRI Standards: Core option. FMC has also engaged a third-party to provide limited assurance to select environmental and safety data. Some of the highlights of its most recent report include FMC's New Sustainability Goals: a commitment to deliver products that maintain a safe and secure food supply and to do so with minimal impact on the planet.

Judges' comments: *"Strong framework. Sustainability integrated into business strategy and product portfolio (I personally liked the Biologicals – plant protection products - fit to sustainability). 93% of R&D invested in sustainability advantaged – impressive. Precision agricultural solutions appear to be an active step to reach out to consumers."*

INEOS Styrolution

Over the past five years, **INEOS Styrolution** substantially improved its EcoVadis rating from a score of 47 (silver rating) in 2015 to 75 (platinum rating) in 2020, reflecting a well-structured, measured strategy and addressing sustainability risks. Over the past two years, the company defined and implemented a strategy and investment plan to support a shift to a circular economy, accelerating efforts to develop post-consumer recycled products. INEOS Styrolution's 2019 sustainability report outlines its strong commitment and actions to transition to a circular and low-carbon economy. The report covers material to the company, such as reduced carbon footprint, marine litter and pellet loss, health & safety, sustainable procurement, and fair business practices. It also contains special sections addressing the company's actions to combat the COVID-19 pandemic.

Judges' comments: *" INEOS Styrolution has a strong focus on sustainable innovation for circularity, plus value chain partnerships. The report confirms a strong program, a stunning visualization of complex processes."*

NOVA Chemicals

In its 2019 sustainability report, **NOVA Chemicals** 2019 shares its role in bringing forward a plastic circular economy, beating the challenge of plastics in the environment, climate change, and ways to improve sustainability in its operations. In 2019 the company introduced seven new "recycle-ready" polyethylene (PE) resins designed to retain their physical performance attributes when repurposed multiple times through mechanical recycling. By using PE, NOVA has worked with customers to replace typically non-recyclable packaging (with layers of mixed material) with recyclable packaging and create markets for post-use plastics. To accelerate the plastic circular economy, the company has also granted its customers access to its proprietary BONFIRE® Film Development Platform and tools to virtually build multi-layer film structures, predict performance and improve packaging sustainability.

Judges' comments: *"Heritage of engagement in sustainability, (e.g., Founding member of Responsible Care and APEW). Comprehensive measures in reducing energy use, waste reduction, and improving safety, management systems in place (ISO 14000), governance, and compliance addressed. Some critical and globally relevant product innovations like Recycle Ready PE, which could be recycled multiple times without loss in properties. A collaborative approach with external work/customers."*

Royal DSM

For **Royal DSM**, answering the demand for products that do not pollute is not just the right thing to do morally. It is the only long-term business strategy. DSM Resins & Functional Materials (DSM R&FM) pursued this objective by divesting its solvent business, replacing 'Chemicals of Concern', and innovating new sustainable technologies, such as water-based, powder, plant-based, and UV technologies. The company announced a series of ambitious and proactive sustainability-related targets, including reducing greenhouse gas emissions by 30% (in absolute numbers compared to 2016) by 2030, according to DSM's sustainability roadmap. The company will accelerate the phase-out of all chemicals of high concern from our finished products. DSM R&FM has already started this journey, and its ambition is to have no sales of products containing chemicals of high concern by 2025.

Judges' comments: *"Trailblazer, typically in top 5 for DJSI. Transformed business from petrochemicals to life sciences with intrinsic green culture across all business units. Powerful link of the business strategy and sustainability. Taking clear actions towards being planet-positive. The actions and reporting are honest."*

Wacker Chemie

Sustainable development means balancing economic, ecological, and social factors in everything we do. **WACKER Chemie** wants to continue developing and supplying solutions that grow sustainability while creating added value for its customers and shareholders. The company's sustainability roadmap to 2030 anticipates a 50% reduction in specific energy consumption (vs. 2007) and a 33% reduction in CO2 emissions (vs. 2012). Longer-term, Wacker's action plan is based on its SustainaBalance® strategy to attain a more sustainable society. This strategy comprises three principles designed to promote the balance between ecological, social, and economic factors. As part of this strategy, the company is also targeting carbon neutrality by 2050. WACKER spent 10% percent of its R&D budget on critical projects in 2019.

Judges' comments: *"Sustainability appears closely linked to business strategy. Strategy in place, SustainaBalance, SDGs addressed, Together for Sustainability, and Responsible Care mentioned, link to product innovation provided by few examples (polysilicon for solar modules), 2050 target: carbon-neutral products and company!"*