ENVIRONMENT

Focusing our collective energy on a greener future

We are striving to consistently minimise our environmental footprint through prudent use of resources and upcycling industrial by-products rather than allowing them to be used in ways that have a negative impact on society, thus accelerating the path to a circular economy.

ADVANCING OUR ENVIRONMENTAL DATA MANAGEMENT

In 2021, we initiated a three-step process to optimise our internal environmental data collection regarding compliance with the Global Reporting Initiative (GRI) standard. First, the internal data collection processes were reviewed in close coordination with all global production sites to ensure consistent collection and monitoring of our environmental data. Then data-collection was conducted for 2021 in accordance with these new collection processes. The third step comprised an external validation of our collected data, which is planned for 2022. However, as the project follow up and external data validation is still ongoing, all numbers used in this Report represent our management estimates, as has been reported in previous years. This key project advances our environmental data baseline significantly and will enable us to include externally validated data in our next annual report.

CARBON-FOOTPRINT STUDIES CONDUCTED IN 2021

In 2020, we established the infrastructure to conduct lifecycle assessments and carbon-footprint studies for our products. During 2021, our efforts evolved, standard process and procedures were implemented, and product carbon-footprint assessments were conducted to support the increasing demand from our customers for transparency of product-carbon footprints along their and our value chains.

Carbon-footprint study for aluminium value chain. We are an important contributor for low-carbon aluminium producers

In 2021, our Rain Carbon subsidiary undertook a detailed product carbon-footprint study with one of its major aluminium smelting customers that produces low-carbon aluminium with hydroelectric power. The goal is to publish this study in a technical paper by mid-2022, and it will highlight our role in producing some of the lowest-carbon aluminium in the world.

The study will provide a detailed breakdown of the smelters' scope 1, 2 and 3 emissions and will be the first study of its kind to use a large body of primary emissions data for the anode supply chain.

The study will show total cradle-to-gate CO_2-equivalent emissions for the smelter, which are ~75% lower than the global smelting average. Rain Carbon is a major supplier of CTP and CPC used at the smelter. The waste-heat energy recovery system at Lake Charles reduces the CO_2 footprint of the CPC by ~16% relative to a calciner with no heat recovery.

Carbon-footprint study for benzene production at our Zelzate site

In 2021, we conducted a product carbon-footprint study for the benzene produced at our Zelzate facility in Belgium. Our benzene is produced from light oil, a by-product of metallurgical coke production, which is isolated by the further processing of coke-oven gas from coal pyrolysis. If this light oil were not extracted from the coke-oven gas, it would instead be incinerated as internal fuel along with the coke-oven gas. At Zelzate, we distil this light oil into various aromatic fractions, including benzene, which is needed for the synthesis of many key products, such as aniline, styrene, nylon, synthetic rubber, plastics, detergents, insecticides and dyes.

There are two primary alternative production routes for benzene. The first is benzene produced based on pyrolysis gas from steam-cracker processes. The second is benzene produced based on the BTX fractions from catalytic-reforming processes. The results were compared with the market mix. (57% steam cracker, 35% catalytic reformer and 8% toluene dealkylation.)*

*(Reference: https://www.petrochemistry.eu/about-petrochemistry/petrochemicals-facts-and-figures/european-market-overview/).

The assessment revealed a product carbon footprint of benzene produced at our Zelzate facility of 1.06 CO_2 equivalent per tonne of benzene. The study showed that, compared to the alternative production routes, our process has a lower carbon footprint than via the steam-cracking production route (-38%) and the benzene market mix (-22%). The study also includes an assessment of the emissions from the alternative combustion of the same amount of light oil necessary to produce one tonne of benzene, which is calculated as 4.16 tonnes CO_2 equivalent. The production of one tonne of benzene via our route is 75% lower than the respective emissions from incinerating light oil as a secondary fuel. However, these promising results are a simplified comparison due to the limitations of the considered system boundaries. The study and the results were critically reviewed in accordance with ISO 14067 by an external, independent third party.

Energy and climate change

We work towards increasing our energy efficiency by investing in steam co-generation and waste-heat recovery plants, powered by the heat given off by our own production processes. The steam and electricity generated from our waste-heat recovery systems are used by our plants and other companies. Additionally, some of our electricity is supplied to local power grids, mitigating the need to generate the same units of electricity – much of which would come from fossil-fuel-fired power plants.

At three of our carbon distillation and advanced materials sites, we link our chemical production with the co-generation of energy, as the heat and steam generated in our exothermic processes is supplied to external parties or other parts of our own production facilities. Five of our carbon calcination plants in India and the US also co-generate power from their processes' waste heat. In our cement-production process in India, we use and are expanding the use of similar technologies to generate electricity from waste heat. Beyond waste-heat recovery, we invested heavily in the development of photovoltaic solar power generation in India, where we are on track to seeing substantial capacity expansion soon.

ENVIRONMENT

An important step to managing the impact of climate change is the monitoring of our energy as well as our GHG emission data. The processes for data collection were reviewed and updated during 2021. The below table summarises the energy and GHG emission data collected per the new processes. This Report uses data reported to the relevant governmental authorities or estimates based on internal-calculation methods.

Energy and GHG data*	2021	Notes
Energy input	**Absolute** 3.9 Mn MWh **Specific** 0.67 MWh/metric tonne product	Based on primary energy, purchased grid electricity, purchased steam and self-generated energy from waste-heat recovery and self-generated renewable-energy for all our production sites where the respective is applicable
Total energy generated from waste-heat recovery	1.2 Mn MWh	Based on electricity and steam generation from different waste-heat-recovery systems in Castrop-Rauxel, Chalmette, Duisburg, Kurnool, Lake Charles, Norco, Suryapet, Vizag and Zelzate
Direct GHG emissions from fuel/waste-gas combustion and production process at sites (Scope 1)	**Absolute** 3.13 Mn metric tonnes CO_2e **Specific** 0.55 metric tonnes CO_2e/metric tonne product	By gas: Includes CO_2 emissions from all our sites, and CH_4, N_20 emissions from our calcination operations and Hamilton plant By source: Includes emissions from fuel combustion, the calcination process and waste-gas combustion for all sites where this is applicable. Limitation: Emissions from waste-gas combustion at Duisburg are not included; Emissions from calcination sites are estimates based on a combination of measured and calculated values. These will be further refined in the future.
Indirect GHG emissions from purchase of grid electricity and steam (Scope 2)	**Absolute** 0.16 Mn metric tonnes CO_2e **Specific** 0.03 metric tonnes CO_2e/metric tonne product	Based on all our production sites.
GHG emissions avoided due to internal energy production from waste heat	0.74 Mn metric tonnes of CO_2e	Based on electricity generation at different waste-heat recovery processes in Castrop-Rauxel, Chalmette, Duisburg, Kurnool, Lake Charles, Norco, Suryapet, Vizag and Zelzate. Avoided emission are calculated from the generated megawatts, emission factors of local electricity grids and combustion of natural gas as well as respective efficiency factors.

*General note: Values cannot be compared with values reported in RAIN's 2020 Annual Report because 1) the methodology of data collection was changed and 2) the scope of the included sites was changed to include data from the Kurnool and Suryapet cement plants.

The following section describes site specific activities to reduce GHG-emissions and use energy most efficiently.

SOLAR AND WASTE-HEAT ELECTRICITY GENERATION AT OUR CEMENT PLANTS IN INDIA

We have invested heavily in a combination of CO_2-offsetting, power-generation systems in our Cement vertical in India. We have done this through a combination of constructing photovoltaic solar power panels and implementing waste-heat capture systems with electric turbines, similar to the systems used at the calcination plants in our Carbon segment. The adoption of these environmentally favourable, captive power-generation technologies enabled us to significantly reduce our CO_2 footprint by reducing our reliance on electricity from the grid in India, where most power is generated from high CO_2-emitting coal.

The following is a summary of our achievements in this area:

Suryapet (Telangana), India

- 4.1 MW gross waste-heat recovery commissioned in 2019
- 1 MW of solar power generating capacity commissioned in 2020
- 1 MW of solar power generating capacity commissioned in 2021
- 3.6 MW of solar-generating capacity on-track to be added during the first half of 2022

Kurnool (Andhra Pradesh), India

- 6.4 MW gross waste-heat recovery commissioned in 2016
- 1 MW of solar power generating capacity commissioned in 2020
- 10 MW of solar generating capacity on-track to be added during the first half of 2022

Case study

NEERI: One of the cleanest CPC manufacturing units from an environmental perspective

In 2018, as part of India's effort to reduce air pollution, the Hon'ble Supreme Court implemented significant restrictions on the ability of India's calciners to import GPC and prohibited the industry from importing any CPC. The court also established that calciners importing GPC should have installed flue-gas desulfurisation (FGD) systems that reduce SO_2 emissions by more than 90%. Currently, we are the only calciner in India with installed FGD systems operating at or above the court-mandated threshold.

In July 2021, RAIN engaged The Council of Scientific Industrial Research – National Environmental Engineering Research Institute (CSIR-NEERI) to perform an independent assessment of the positive impact of its pollution-control efforts, as part of the Company's effort to gain unrestricted access to GPC and CPC imports. In September, CSIR-NEERI published its report, which looks specifically at the reduced emissions resulting from the use of flue-gas desulphurisation (FGD) and waste-heat recovery (WHR) systems for electricity generation at RAIN's Vizag calcination facility and the new vertical-shaft calciner in the Andhra Pradesh Special Economic Zone (APSEZ).

In terms of the plants' state-of-the-art FGD systems, CSIR-NEERI concluded that RAIN has more than 98% scrubbing efficiency, thereby making these units one of the cleanest CPC manufacturing units from an environmental perspective.

CSIR-NEERI also found that our ability to co-generate power (40 MW at the Vizag plant and 15 MW at the APSEZ plant) and thus replace an equivalent amount of electricity from coal-fired power plants have major environmental benefit. According to CSIR-NEERI, the GHG [greenhouse gas] emissions are set to zero when power generation is obtained by steam generated from waste-heat recovery systems compared with estimated GHG emissions of 1,537 and 576 tonnes per day when using coal to generate 40 MW and 15 MW of electricity, respectively. Therefore our CPC manufacturing will result in an overall reduction of SO_2 emissions, ash generation and greenhouse gas emissions (due to reduced coal consumption) for an equivalent power generation.

Case study

GHG-emission and energy-efficiency activities at Duisburg

An example of the energy-efficiency projects from our site in Duisburg is the optimisation of the two process steps of vacuum distillation and strip-steam distillation, which started in 2021. The process change combines vacuum- and steam-stripping, enabling the site to reduce steam pressure as well as distillation time. In this way, more material can be produced in the same timeframe while using less energy (steam) to produce each tonne of product. Overall energy consumption was reduced by ~8,500 MWh per annum. Another benefit of the process changes made in polymerisation and distillation was a median increase in yield of around 10%.

In 2021, Duisburg also conducted the project 4,000+ (referring to the monthly production-tonnage target for our NOVARES® resins). The aim is to streamline the overall production process – in particular, the liquid-resin product line (LA, L and LS series) – to better meet the specified viscosity. To date, the project has resulted in shorter distillation times, higher throughput and a decrease of energy consumption (temperature) per batch. For example, these changes reduced the distillation time of our NOVARES® LS-500 by approximately half and reduced the process time of other liquid products by ~20%.

Another activity that enabled significant energy savings at our sites as well as for our customers was the ramp up of hot-molten deliveries from Duisburg to adhesive customers across Europe. Selected resin customers are now increasingly receiving resins in a hot-molten state rather than as solid-resin pastilles. This saves energy twice: first, since we do not need to cool the product to further process it (pastillisation), and second since the hot-molten resins do not require customers to use additional energy for re-melting the resins before using them in their processes.

Case study

Equipment upgrades lead to energy savings at German production sites

At our Castrop-Rauxel and Duisburg sites in Germany, we have had a systematic energy-management system ISO 50001-certified since 2014. We continuously monitor our process to identify and act on any untapped energy-efficiency potentials.

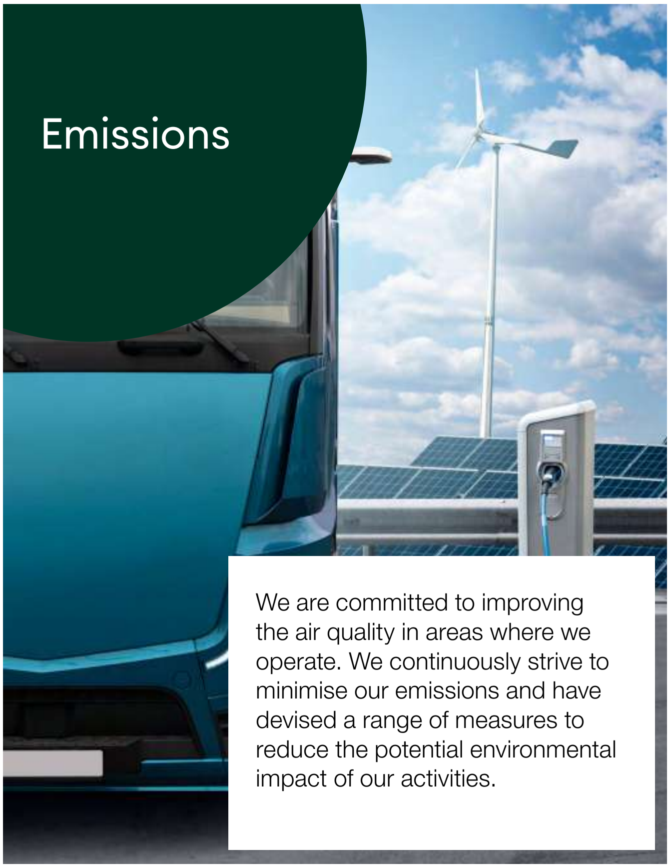
In 2021, the naphthalene production unit in Castrop-Rauxel was upgraded in terms of energy efficiency. The installation of a more advanced and energy-efficient cooling system, including a new refrigerant, enabled a significant reduction in energy consumption. Across all energy-efficiency projects, the specific energy consumption for the Castrop-Rauxel site in 2021 was reduced by 23.7% in comparison to 2020.

Case study

Oxygen injection at our calcining facilities

Using oxygen instead of natural gas reduces absolute CO_2 emissions of our calcining facilities since it reduces flue-gas volumes inside the kiln, which decreases fines loss and improves kiln yield. Currently this technology is used at our Chalmette, Gramercy and Vizag calciners. Over the 2014-21 period, a detailed analysis of the oxygen-injection and process changes to improve the kiln yield was conducted at the Vizag calciner, which showed a kiln yield improvement of 4.5% and CO_2 emissions reduction of ~23%. A further detailed study is planned at Chalmette in 2022 to quantify GHG benefits of shifting from natural gas to oxygen at other calcining facilities.

Emissions



We are committed to improving the air quality in areas where we operate. We continuously strive to minimise our emissions and have devised a range of measures to reduce the potential environmental impact of our activities.

Four of our six US anode-grade and titanium dioxide-grade calcination plants are fitted with different types of continuous emissions monitoring systems (CEMS) in the exhaust stacks. The CEMS ensure that we operate well within mandatory emissions limits.

At our carbon distillation and advanced materials facilities, we have a Leak Detection And Repair (LDAR) project to proactively and regularly check for fugitive losses of benzene, toluene and xylene (BTX) emissions. This project was originally initiated at our facility in Zelzate, Belgium in 2010. Due to its success, a similar project was rolled out at our Castrop-Rauxel, Hamilton and Cherepovets distillation facilities in Germany, Canada and Russia, respectively. Across most of our coal tar distillation units, wet scrubbers are installed to reduce air emissions. These scrubbers remove particles and gases from waste-gas streams, typically in tank farms.

NOX AND SOX EMISSIONS

Our Castrop-Rauxel distillation and advanced materials facility in Germany has an integrated waste-gas incineration plant, including a denitrification (DeNOx) and an FGD plant that treat the flue gases from exhaust gas combustion. The FGD reduces the SO_2 load of the flue gases from waste-gas combustion by 95%; the other flue gases produce only marginal SO_2 emissions because of the low-sulphur fuel used. The exhaust air from the biological wastewater treatment is cleaned by an activated carbon filter system, thus reducing VOC emissions significantly.

At our Zelzate distillation and advanced materials facility in Belgium we operate a flue gas desulfurisation to reduce our SOx air emissions. Furthermore, a DeNOx unit is under construction and will be operational in 2022-23. This unit will reduce the total NOx emissions of the Zelzate site by ~60%.

Due to the nature of the different raw materials processed at our production facilities, SOx emissions predominantly occur at our carbon calcination sites. However, we have invested heavily in technologies that dramatically reduce emissions of these non-greenhouse gases from our processes. We continuously strive to implement efficient, flue-gas treatment systems and make new investments in these responsible technologies.

The processes for data collection were reviewed and updated during 2021. The below table summarises the NOx and SOx emission data collected as per the new processes. The below figures are based on data reported to the relevant governmental authorities or estimates based on internal-calculation methods.

Type of Emissions*	Value 2021	Note
Specific NOx emissions	0.50 kg NOx/metric tonne	Based on emissions at Chalmette, Cherepovets, Duisburg, Gramercy, Hamilton, Kurnool, Lake Charles, Norco, Purvis, Robinson, Suryapet, Vizag and Zelzate
Specific SOx emissions	2.79 kg SOx/metric tonne	Based on emissions at Chalmette, Cherepovets, Duisburg, Gramercy, Hamilton, Kurnool, Lake Charles, Norco, Purvis, Robinson, Suryapet and Zelzate

*General note: Values cannot be compared with values reported in RAIN's 2020 Annual Report because 1) the methodology of data collection was changed and 2) the scope of the included sites was changed to include data from the Kurnool and Suryapet cement plants.

Case study

Norco and Chalmette: SO_2 emissions-scrubbing improvements

In 2021, we installed an improved fresh-lime injection system at our Norco site to improve the SO_2-scrubbing efficiency. This, in turn, also reduces the site's fresh-lime raw material consumption and generation of scrubber by-product material. Additionally, we have installed a redundant, standby fresh-lime feeder, which ensures continuous operation of Norco's scrubbing system.

We are also undertaking significant improvements to our waste-heat energy recovery system at the Chalmette facility in 2022. The tubes in the steam-generating bank of the boiler will be replaced, and the joints from the economiser tubes to the headers will be redone with additional quality controls. These major investments will improve the reliability of Chalmette's boiler and associated co-generation power plant, allowing for more reliable energy production and scrubbing performance as well as a lower carbon footprint for each tonne of CPC produced by increasing the amount of electricity generated every year at Chalmette by RAIN. These activities will enable us to further reduce our SO_2 and CO_2 emissions per tonne of CPC produced at Chalmette by increasing the annual amount of flue gas that we will divert through the FGD system. The improved boiler and power plant reliability will enable us to reduce the units of electricity needed (and its associated carbon footprint) from external power-generation plants. With the installation of new tubes in the steam-generating bank of the boiler, we expect to produce ~4% of additional steam for the same flue-gas quantity, increasing the plant's electric-power generation, thus contributing to lower carbon footprint.

Case study

Atchutapuram: New FGD technology utilised by RAIN

We commenced operations in September 2021 at our newest calcination plant in Atchutapuram, India. This new plant utilises vertical-shaft kiln technology, which allows for a higher percentage of our green petroleum coke raw material to be converted into CPC. Like its sister plant in nearby Vizag, the Atchutapuram plant was equipped with a waste-heat boiler and electricity-generation system, plus an accompanying FGD system. This new FGD system, however, is based on an even more efficient ammonia SO_2-scrubbing technology, which can remove 99% of the SO_2 from our emissions stream. Starting with Vizag, and now being followed at Atchutapuram, we will be operating the only two calcination plants in India that scrub SO_2 from the exhaust gas for the benefit of the environment and use their process heat to generate electricity.

Case study

Zelzate: Improved odour management

Based on research first conducted in 2018, an action plan to reduce the odour impact on the neighbourhood was developed and continuously implemented. Since then, a significant decrease of the odour impact in the neighbourhood by almost 60% could be achieved by implementing the following measures:

- Closed pitch-loading and -unloading station
- Extra treatment of pitch waste gases
- Closed sampling stations and leak-free pumps
- Installation of a new closed solvent-loading station

Additional measures to reduce emissions and odour are planned for 2022. This includes the connection of the tar-oil storage to the waste-gas incinerator.

Water management

Water is an essential resource at our sites, where it is primarily used to generate steam in power plants and for cooling in our production facilities.

Water availability and quality are global challenges, and industrial companies can contribute to this through sustainable water management. We have biological wastewater treatment and water-recycling and -cooling circuits in place at multiple facilities and we are working to optimise these processes further.

NEW WATER FILTRATION SYSTEM UNDER CONSTRUCTION AT OUR GRAMERCY SITE

At our Gramercy terminal in the US, we are testing a new, more efficient water-filtration system to reduce the total suspended solids released when removing excess water from our raw material barges. This filtered water can be reused within the calcination plant, reducing the need for additional water. All laboratory results during the testing phase of this new filtration system have indicated an 85% improvement in reducing suspended solids. Based on these results, we are planning to install a large-scale, permanent system at Gramercy during 2022.

EFFICIENT WATER MANAGEMENT AT OUR HAMILTON SITE

The Hamilton plant in Canada operates an on-site sewer system. To further minimise groundwater infiltration, the system periodically undergoes inspections and has undergone major repairs in recent years, including relining of pipelines and lining of catch basins. These activities reduce the risk of quality problems and the excessive quantity of discharged water. Additionally, the following activities were conducted in water management:

- In 2020 a new stormwater-treatment unit was commissioned to collect and treat all site stormwater. By adding a reverse-osmosis unit behind the stormwater treatment, the site will recycle significant volumes of water and reduce the use of potable water. The unit will be commissioned in 2022.
- In the membrane biological reactor wastewater-treatment unit, several additional filtration modules were installed in 2020 to enable higher throughput and improved contaminant removal. Further optimisation in 2021 led to an increase of throughput from 5 imperial gallons per minute to 12 imperial gallons per minute – an improvement of over 100%.
- Our Hamilton facility is now able to handle all process wastewater generated on site, rather than shipping it off site for treatment by a third party. An additional benefit is the avoided steam production due to a 10-15% reduction in total energy consumption resulting from the installation of vacuum pumps and elimination of the use of stripping steam in both primary distillation units.

EFFICIENT WATER MANAGEMENT AT OUR VIZAG SITE

At the Vizag calcination plant in India, efficient use of water is daily exercise. For example, all sewage water is treated to such a degree that it is suitable for use in watering the green belt surrounding our plant. Elsewhere, the wastewater from our Vizag waste-heat power plant and its auxiliary cooling-tower blowdown water is being reused in the flue-gas desulphurisation process after treatment. These processes increase our site's water efficiency and reduce consumption of this precious resource for every tonne of material it produces.

Waste management

Our production processes aim at highest resource efficiency in converting as much raw materials as possible into products and thus minimising waste volumes. We consider resource efficiency to be key target in our business model.

We implemented multiple different activities across our global operations. At our Castrop-Rauxel site in Germany, we operate a raw material-recovery plant that processes the suspensions from the facility's water purification processes, extracting materials that can then be used as secondary raw materials. At our Hamilton facility in Canada, drippings from our unloading lines are now collected and fed into our raw material storage units for processing instead of being disposed of as waste.

Waste reduction through the sustainable use of lime from our FGD systems is important for our calcining facilities. At our Vizag calcining facility in India, we supply the sulphate lime by-product to local brick manufacturers who use it as a key blend component, instead of sending it to landfill. This reduces the environmental impact while also providing employment to the industry producing bricks. Our US lime FGD by-products similarly find beneficial uses in a host of end applications, including soil stabilisation, road-bed construction and agriculture. Our newest FGD system, at the Atchutapuram vertical-shaft calciner in India, employs an ammonia-scrubbing technology, whose by-product is ammonia sulphate, which can be used as a fertiliser by the local agricultural community.

In our Cement segment, we initiated a sustainable waste-management programme to achieve the goal of 'zero waste' by focusing on regulatory compliance and maximum resource recovery. For this purpose, we established a dedicated waste-converter unit in each cement plant during the first week of 2021 with all the following results:

- Over 100 kgs of waste (dry, wet, and unrecoverable/reject combined) generated daily at each site is now segregated at the source for compositing, recycling or upcycling through burning in the cement kiln
- Non-recyclable dry waste, such as multi-layered plastic packaging and segregated combustible fractions—plastic waste too small to be recycled—is combusted in the kiln

As a result of these and other activities at our cement plants, we have:

- Attained our goal of sending zero waste to landfill
- Reduced greenhouse emissions by ~7.75 metric tonnes each month
- Used the compost produced from the wet waste and garden litter for in-house landscaping at our cement facilities

Circular economy

There are multiple definitions of the term circular economy, and many of them focus on the use of raw materials and often follow the approach of reducing (minimum use of raw materials), reusing (maximum reuse of products and components) and recycling (high-quality reuse of raw materials).

A circular economy is the opposite of linear business models, in which products are manufactured from raw materials and then discarded at the end of their useful lives. The essential component of a circular economy is to keep products and materials in productive use for as long as possible, to minimise landfilling and incineration of waste. A circular economy promotes waste minimisation and encourages the reuse and recycling of materials. We contribute to circularity and a circular economy in different ways.

Our business model links linear value chains by upcycling

In our Carbon and Advanced Materials segment, we convert by-products from other industries and ensure that these are used in most productive ways. In this way, we serve as the critical 'carbon link' between linear business models. For example, we link the oil-refining and steel industries to the aluminium industry by converting by-products of oil refining and steel production into essential ingredients in the anodes necessary to produce aluminium. Another example is the conversion of by-products to value-added wood-impregnation products.

Reusing fly ash is contributing to circular economy through resource efficiency

In our Cement segment, we upcycle fly ash produced as a by-product of coal-fired power generation with our clinker to produce portland pozzolana cement (PPC), which is used in buildings and other construction applications that require high-strength concrete. To avoid environmental hazards, power companies are required to isolate the fly ash in containment ponds that require vast land parcels and huge quantities of water to convert the ash into a manageable slurry. Our ability to instead use fly ash in our PPC reduces the risk of an environmental catastrophe that could occur in the event of a containment-pond failure. Upcycling fly ash also enables us to produce 50% more PPC using the same volume of limestone, thus reducing our carbon emissions compared with that of producing the same volume of cement without incorporating fly ash. We also use a smaller amount of fly ash – about 5% – in the production of ordinary portland cement (OPC). As a result of these efforts, over the last few years, we have significantly reduced our production of OPC, as we shift to the eco-friendlier PPC. It accounted for close to 78% of our total cement production in 2021.

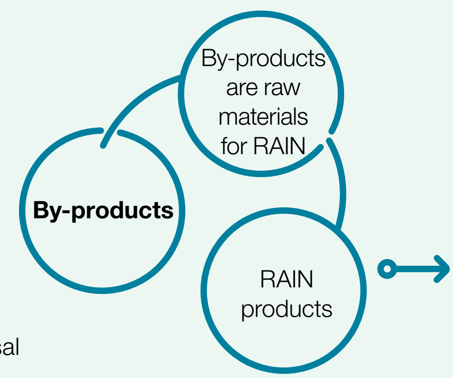
Our products are critical elements in well-established process technologies for producing materials that can be recycled in closed loops

Our products are essential prerequisites for aluminium and recycled steel: Our CPC and pitch products enable the production of aluminium, which is a metal that can be infinitely recycled and is therefore a key component in the circular economy. According to the Aluminium Association, nearly 75% of the aluminium ever produced is still in use today, and aluminium beverage cans used in the US are composed of 73% recycled content.

Our CTP also plays an important role in the steel recycling process. Pitch is one component in the production of graphite electrodes for electric-arc furnaces (EAF), where steel scrap is recycled at the end of its useful life and brought into a new use phase.

Linear economy

Upcycling



Circular economy - Aluminium