



Natural Resources Management

Our impact on the environment – and responsibility to act – extends beyond our greenhouse gas emissions. As an oil, gas, and chemicals company, OMV's environmental footprint is significant due to its water use, environmental degradation caused by spills, biodiversity impacts, and waste. But we also have the technological know-how to present solutions to reduce this impact, in particular by fostering the circular economy. In contrast to the linear “take-make-waste” model, which will lead to more plastic waste and environmental pollution while putting pressure on the planet's limited resources, a circular economy is regenerative by design and aims to decouple growth from the consumption of finite resources.

OMV is fully committed to taking action when it comes to responsible natural resources management and will proactively expedite the transition from a linear to a circular economy. OMV aims to minimize environmental impacts by preventing water and soil pollution, reducing emissions, using natural resources efficiently, and avoiding the disruption of biodiversity.

The Natural Resources Management strategic focus area combines our commitments and actions relating to environmental preservation under one umbrella. The first step is to manage our operational footprint, as described in the Environment section below. The Circular Economy material topic then describes the strategies and technologies we are applying to recover and reuse by-products or waste to make new materials and products, resulting in a cleaner environment.



Environment

Material Topic: Environment

Protecting natural resources and ecosystems, especially through the prevention of spills and water, air, and soil pollution.

Key GRIs

- ▶ GRI 303: Water and Effluents 2018
- ▶ GRI 305: Emissions 2016
- ▶ GRI 306: Waste 2020
- ▶ GRI 306: Effluents and Waste 2016
- ▶ GRI 307: Environmental Compliance 2016

NaDiVeG

- ▶ Environmental concerns

Most relevant SDGs



OMV aims to minimize environmental impacts through measures such as preventing water and soil pollution. OMV is liable for the impact that our activities have on the environment. Breaching environmental regulations on a local, national, and international level would result in both financial losses and harm to our reputation. Our license to operate depends on compliance with regulations relating

to environmental protection, which is also of particular importance to governmental authorities, shareholders, and stakeholders such as the public and environmental NGOs and NPOs. OMV's Code of Conduct and HSSE Policy formalize our public commitments to safeguarding the environment.



Targets 2025 and 2030

- ▶ Increase waste reuse and recycling from operations
- ▶ Reduce freshwater withdrawal

Target 2030

- ▶ Reduce use of natural resources by reducing oil and gas production levels to around 350 kboe/d and by reducing crude distillation throughput by 2.6 mn t

Status 2022

- ▶ Waste recovery or recycling rate: 63%
- ▶ Freshwater withdrawal: 279,983 megaliters
- ▶ Production: 392 kboe/d
- ▶ Crude throughput: 13.0 mn t¹³

Most relevant SDGs



SDG targets:

- 3.9** By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water, and soil pollution and contamination
- 6.3** By 2030, improve water quality by reducing pollution, eliminating dumping, minimizing the release of hazardous chemicals and materials, halving the proportion of untreated wastewater, and substantially increasing recycling and safe reuse globally
- 6.4** By 2030, substantially increase the efficient use of water across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity, and substantially reduce the number of people suffering from water scarcity
- 6.6** By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers, and lakes
- 12.4** By 2020, achieve the environmentally sound management of chemicals and all waste throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water, and soil in order to minimize their adverse impacts on human health and the environment
- 12.5** By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse
- 15.5** Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity, and, by 2020, protect and prevent the extinction of threatened species¹⁴

Our internal Environmental Management (EM) Standard stipulates an assessment of environmental impacts and risks, and adherence to environmental performance requirements in terms of energy use, emissions into the atmosphere, water use and discharge, the use of raw materials, waste management, hazardous substance handling, and biodiversity and ecosystem protection. In 2020, the EM Standard was revised and minimum requirements on odor emissions were established. In 2021, the EM Standard was revised again, following which minimum requirements on H₂S in vented gas and the design of the environmental processes to complement the implementation of the EM Standard were added. The review in 2022 resulted in the addition of two new annexes on a Water Management Plan Framework and Water Management Plan Template.

Before undertaking new operational activities or entering new countries, environmental risk assessments are performed, including evaluations of local legislation, the potential impact of our activities on sensitive and protected areas, and the effects on endangered species. Each subsequent phase of project implementation is accompanied by a detailed assessment of environmental risks.

The framework and methodology for our coordinated Group-wide Environmental Risk Assessment are based on best practice standards, which meet the ISO 14001 requirements and ensure the consistent qualitative assessment of operational risks and impacts related to the environment.

The OMV Group's Environmental Management Standard furthermore defines the process of carrying out Environmental and Social Impact Assessments (ESIAs), mainly for projects. Preventive and mitigation measures and the monitoring program to ensure implementation of the proposed measures are documented in an Environmental and Social Management Plan. The final ESIA report is submitted to the local regulator or lender (whichever is applicable) for review, public disclosure, and approval.

48% of sites certified to ISO 14001

The OMV Group's Environmental Management Standard requires that all relevant OMV businesses and activities (including investment, acquisitions, and divestment) implement an Environmental Management System (EMS) consistent with ISO 14001 and adhering to the minimum requirements listed. All relevant OMV businesses are required to review and update the EMS at least once per year, while a full EMS audit must be carried out either by an external independent auditor or OMV corporate environmental experts every three years for sites not certified to ISO 14001. Internal EMS audits are performed regularly and as necessary at local level to identify improvement measures.

¹³ In 2022, the utilization rate of the European refineries saw significant negative impacts from the turnaround and the incident at the Schwechat refinery, as well as the turnaround at the Burghausen refinery, which also resulted in a substantially lower crude oil throughput.

¹⁴ Several UN SDG subtargets were initially designated to be reached by 2020. However, sources such as the UN's Global Biodiversity Outlook state that goals related to nature have not been met. OMV still considers the attainment of these goals relevant past the year 2020, and thus still links these SDG subtargets to its strategic targets.



Governance

There is a high degree of interdependence between the Environment material topic and the material topics Health, Safety, and Well-Being, and Security, Emergency, and Crisis Resilience. Thus, these distinct material topics are governed centrally by Group HSSE. The OMV Group HSSE department is organized into specialized teams with experienced experts in areas such as:

- ▶ Development and implementation of OMV's HSSE strategy, regulations, and processes
- ▶ HSSE risk assessment
- ▶ Incident investigation
- ▶ HSSE data analysis and reporting
- ▶ Environmental management
- ▶ Process safety management
- ▶ Security and resilience management

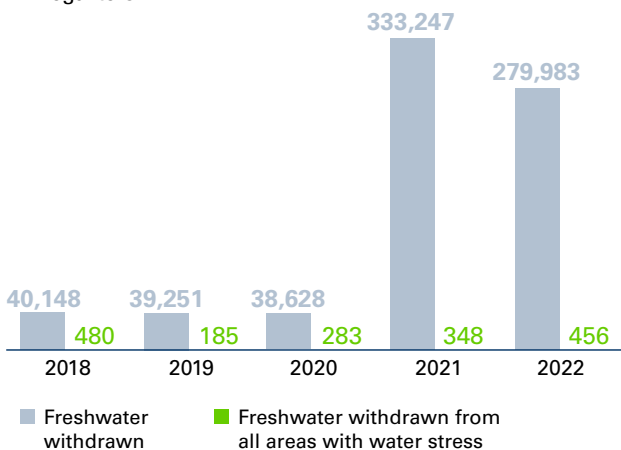
Group HSSE is led by the VP HSSE, who reports directly to the Chief Executive Officer. There are HSSE departments at OMV Petrom and Borealis, which oversee their specific issues and coordinate their local HSSE officers and experts. The OMV Petrom and Borealis HSSE departments report functionally to the VP HSSE at Group level.

Environmental awareness is promoted across the Group through various activities. For instance, regular exchanges on Environmental Management are held, where environmental experts and interested colleagues Group-wide can learn about the best practices being implemented at other sites and gain inspiration. At OMV Petrom, a contest to highlight key initiatives in the company was again held in 2022, with winners receiving awards from the OMV Petrom Executive Board.

Water

Freshwater Withdrawn¹⁵

In megaliters



OMV uses significant amounts of water for its operations in its upstream and downstream activities. Freshwater is used for processes such as drilling, steam generation, and cooling, among others. Smaller amounts of water are also used for non-industrial purposes. Any water produced is treated for reinjection into pressurized hydrocarbon reservoirs to optimize the extraction rate. Desalinated water is used in some offshore operations. Refineries and various other operating facilities also use brackish and/or recycled water for various operational purposes. Some of OMV's operating facilities are located in water stress areas.¹⁶

Specific Policies and Commitments

Our Water Ambition Statement is OMV's public commitment to water management, and states the following:

- ▶ We respect water as a precious limited resource and focus on its sustainable use.
- ▶ We are committed to meeting all applicable legislative requirements or our own OMV regulations, whichever are more stringent.
- ▶ Water management is a key component of our social license to operate. We cooperate with local communities and prove to be responsible partners.
- ▶ We are committed to transparency when it comes to our impact on water resources.
- ▶ Every OMV employee is responsible for minimizing the impact of our activities on water resources.

The OMV Group's Environmental Management Standard requires all OMV businesses and activities to minimize the impact of effluent on the environment and on local communities, and outlines specific requirements for wastewater discharge onshore and offshore. The direct discharge of wastewater on land, in wetlands, or in other bodies of water without prior treatment is not permitted. No discharge may alter or diminish the value of the receiving environment. All discharge must be systematically monitored, and any environmental impact must be managed appropriately. Local regulatory and river basin authorities are involved to ensure that OMV complies with local environmental regulations and has obtained all of the required permits. The OMV Group's Environmental Management Standard was updated in 2022, with key additions being new annexes for the development and implementation of Water Management Plans.

Management and Due Diligence Processes

OMV's Group-wide Water Strategy was drafted in 2014 and is based on five strategic pillars: transparency, risks and opportunities, water efficiency and treatment, training and awareness, and stakeholder engagement.

¹⁵ The increase in freshwater withdrawn in 2022 and in 2021 compared to previous years is due to the consolidation of Borealis. The majority of freshwater withdrawn at Borealis is once-through cooling water, meaning it is discharged to the environment in its original quality, only with a very slightly elevated temperature. See [Environmental Data](#) for details.

¹⁶ Areas of water stress are areas where the demand for water exceeds the available amount during a certain period, or when poor quality restricts its use. In such areas, water stress causes deterioration of freshwater resources in terms of quantity (aquifer overexploitation, dry rivers, etc.) and quality (eutrophication, organic matter pollution, saline intrusion, etc.). Source: [European Environmental Agency](#)



Risk Assessments

High-level water stress assessments are conducted on an annual basis. In order to identify operations in areas affected by water scarcity and water stress, OMV uses international tools and indexes such as the Verisk Maplecroft Water Stress Index complemented by the World Resources Institute (WRI) Aqueduct Baseline Water Stress Index, and its own assessments as required. Some regions where OMV operates have already experienced water stress in dry years and a further decline in water availability is expected, mainly due to climate change.

A bottom-up approach in the assessment of water-related risks is followed in accordance with OMV's Group-wide Environmental Risk Assessment (ERA) guideline to ensure consistent qualitative assessments of operational risks and impacts related to the environment, including water. Significant risks are integrated into OMV's Enterprise-Wide Risk Management (EWRM) system. When entering a new country or considering new operational activities, OMV primarily uses the World Resources Institute (WRI) Aqueduct tools and Verisk Maplecroft indices to identify future potential water-related constraints, such as baseline water stress, groundwater stress, and seasonal variability.

Water management-related risks are closely linked with the topic of spill prevention. Offshore operations may lead to oil spills that have a significant impact on marine water resources and ecosystems. The response strategy aims to minimize the probability of such risks and maximize preparedness so that we can provide timely remediation measures in the unlikely event of an oil spill. OMV allocates significant resources to prevention and mitigation measures. Read more about spill prevention in the section [Spills](#). Any new or existing offshore drilling activity is accompanied by a third-party analysis evaluating the magnitude of a potential major event and its possible consequences. As part of the biannual Group-wide EWRM process, water-related risks and mitigation measures are assessed in a larger strategic context, while a systematic approach is taken in day-to-day operations to monitor and manage high-impact/low-probability risks, such as blow-outs during offshore drilling.

Water Management Plans

Water Management Plans are an effective tool for addressing all water-related topics, issues, and tasks, with the aim of improving water management performance. They provide information about current water uses and chart a course for water efficiency improvements, conservation activities, and water reduction goals.

Every location in the OMV Group must develop, implement, and maintain a Water Management Plan, which should include at least the following elements:

- ▶ Scope and objectives including site description
- ▶ Applicable legislation, other requirements, and permits
- ▶ Identification of water sources, discharges including water quality parameters, and monitoring plans
- ▶ Water map, inventory, and balance including discharges
- ▶ Water transport, storage, and treatment systems
- ▶ Significant water-related risks and mitigation measures
- ▶ Water conservation and water efficiency measures including an action plan

Operating facilities located in places that are affected or are likely to be affected by water scarcity issues, and operations utilizing significant water resources (e.g., Tunisia) are prioritized when developing and implementing Water Management Plans. These plans aim to allow sustainable long-term production with minimal effects on the environment.

Best Available Technologies

We implement measures to reduce freshwater withdrawal to a minimum. These include: reduction of operational complexity, water recirculation (e.g., at CCPP Brazil), upgrade of equipment (boilers), maintenance of equipment to reduce water loss, replacement of water cooling systems with air coolers (for example, the C3+ fraction recovery plant from Petromar), the use of desalinated seawater rather than freshwater, the installation of recirculating cooling systems, the use of air or glycol as a cooling agent instead of water (e.g. at Oltenia's 2 Bustuchin compressor station asset), and optimization of pipeline routes for water supply. In addition to implementing measures to reduce freshwater withdrawal, we implement the Best Available Technology (BAT) to sustainably treat water.

Stakeholder Engagement

Our impact on water resources is important to various stakeholders. We engage with government authorities, such as river basin management authorities, on compliance with water use rules and environmental parameters relating to any wastewater generated. We also engage with local water utility companies to discuss the supply of freshwater for OMV operations and the treatment of wastewater. We additionally work with NGOs on environmental preservation and water resource conservation, as well as with local communities on the sharing of local water resources and the quality of discharged wastewater.



For instance, in Austria, there are local fisherpersons who fish the Danube in Schwechat, close to both the refinery and the Lobau Tank Farm, and in the harbor there, with whom we have maintained an active and open dialogue for several years. In areas where OMV operations require large amounts of water, or areas that suffer from water stress, it is particularly important to include local stakeholders in water management activities to secure a “social license to operate.” OMV’s water management activities pursue socially equitable water use, and OMV regularly carries out supplier audits to ensure compliance with our human rights requirements.

To ensure that the interests of local communities are known and taken into account during the project life cycle, OMV conducts social baseline studies and community needs assessments as part of Social Impact Assessments (SIAs). If these assessments identify the need, OMV launches community projects aimed at increasing access to clean water for local communities. Our Community Grievance Mechanisms also enable communities to raise concerns about water-related issues. For more information, see [Community Impacts and Grievances](#).

2022 Actions

The following key activities were carried out across the Group in 2022:

Water Management Plans completed for **67%** of priority sites

0.16% of freshwater withdrawal is in water scarce areas

0.06 mg/l dispersed oil concentration in discharged water

- ▶ Water Management Plans have been completed for 67% of priority sites, with the development of plans in progress at the remaining sites. All plans are developed according to the new annexes of the OMV Group’s Environmental Management Standard.
- ▶ A regulatory water assessment audit was conducted for OMV Tunisia (Nawara Central Processing Facility) to check compliance with internal and legal requirements, assess the water distribution network, and improve water efficiency accordingly. The audit process was based on consumption data, pressure and flow rate measurements, evaluating the status of sanitary equipment, and identifying the source of leaks. The data assessment and monitoring showed that water performance has improved compared with 2021.

- ▶ In 2022, Borealis installed a wastewater treatment plant in Stenungsund. The new waste water treatment unit is designed according to the BAT for this purpose and fulfills all legal requirements from the Swedish authorities. A new and modern wastewater treatment unit will improve the environmental performance of the cracker plant and reduce the environmental impact on the surroundings. The new wastewater treatment unit will reduce the emission of contaminants to the Baltic sea and will also minimize VOC emissions to the air, since all treatment steps are covered and enclosed. The new unit includes buffering in two tanks and physical and chemical treatment of the water in dissolved nitrogen flotation units. The off-gas from the different steps will be treated by adsorption in carbon filters.

Outlook

As part of our Sustainability Strategy 2030, we aim to reduce freshwater use. As a next step, we plan to establish quantitative targets to improve water management. By the end of 2023, the aim is for all operated OMV Group sites to have finalized and implemented their Water Management Plans.

Spills

Oil spills¹⁷ are a critical environmental issue for our industry. Spill management is defined as the prevention of spills in operations and those caused by incidents such as sabotage or natural hazards, and the management and remediation of spills resulting from an incident. Our key commitment is to prevent spills from happening in the first place. If they do occur, we aim to reduce their impact through appropriate and fast oil spill response and clean-up.

Multiple stakeholder groups are affected by our spill management activities. Government authorities are involved through potential breaches of environmental regulations, while employees and contractors are impacted by potential health and safety issues arising from accidents and damage to the environment and society. NGOs/NPOs are interested in potential damage to the environment and society, society may suffer as a result of damage to the surrounding environment, and shareholders may have to deal with direct financial losses due to the costs of remediation measures and reputational damage.

Furthermore, as OMV is diversifying, oil spills are no longer the only spills we need to deal with. For our subsidiary Borealis, preventing pellet spills is also a key issue. Borealis is committed to achieving zero pellet loss in and around its operations, during transportation, and across the entire value chain. The company was therefore an early

¹⁷ Oil spills are defined as hydrocarbon liquid spills that reach the environment.



signatory to Operation Clean Sweep® (OCS), an international program initiated by the Plastics Industry Association and the American Chemistry Council and rolled out in Europe by Plastics Europe. Borealis is also a signatory of the Zero Pellet Loss pact in Austria, which is the Austrian equivalent of OCS. Achieving zero pellet loss is an ongoing journey and requires leadership, effort, investment, and targeted and effective work practices. The following section will discuss our management of oil spills. Read more about our efforts on pellet spills in the [Borealis Annual Report](#).

Management and Due Diligence Processes

We aim to prevent and reduce oil spills and leakage in our operations at sea as well as on land. Appropriate spill prevention and control plans that account for specific business conditions have been put in place. These include proactive management plans comprising risk assessments, preventive measures, and inspections, as well as reactive management plans comprising control, response, and clean-up procedures. The majority of our oil spills involve OMV Petrom’s E&P division, where we concentrate our efforts on safeguarding and maintaining our infrastructure and improving the reliability of our facilities.

Hazard Identification and Risk Assessments

We have a well integrity management system in place, and detailed Hazard and Operability (HAZOP) and Hazard Identification (HAZID) studies have been conducted for all our wells. OMV has also developed a Corrosion Management Framework (CMF) to provide a proactive and consistent approach to corrosion monitoring and management across the entire OMV Group. Covering the full life cycle of the equipment exposed to the risk of corrosion in both oil and gas facilities, from the well to the sales point, this framework encompasses the entire value chain of our business. A team of 30 in-house experts with multidisciplinary and multicultural backgrounds is working to embed CMF principles into everyday operations.

Emergency Response and Contingency Plans

We conduct spill responses according to a plan that identifies appropriate resources (persons in charge and intervention materials) and expertise. This plan assists on-site personnel with dealing with spills by clearly setting out the responsibilities for the actions necessary to stop and contain the spill and to mitigate its effects. This includes techniques for preventing the spill from moving beyond the immediate site and collecting the spilled substance and contaminated material. Clear communication and coordination protocols are set out in the local plans, particularly where national or international response resources may be required. We carry out regular oil spill response drills and training.

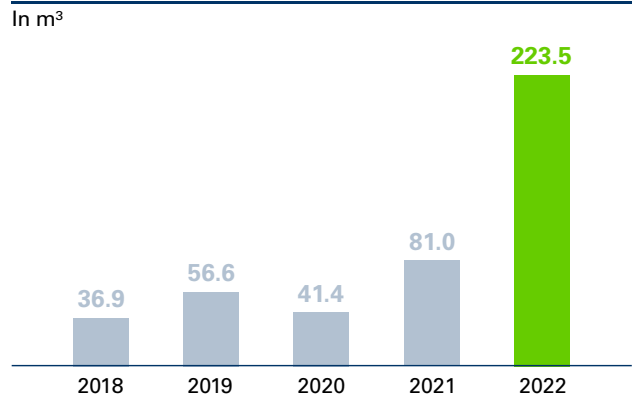
Clean-up and Remediation

Oil spills are assessed and cleaned up immediately after their occurrence in accordance with internal procedures governing spill remediation. In particularly difficult cases, we rely on third-party support for capping and containment, surface clean-up, and emergency management. Leaks are repaired immediately or within defined time frames in accordance with the site’s maintenance processes and based on the risk assessment outcome and other factors, such as feasibility of repair during operation. To strengthen our response to and reduce the environmental impact of oil spills, we continue to perform emergency drills, including pollution scenarios. We approach remediation measures in line with the relevant legal requirements, which include clean-up, restoration, rehabilitation, and/or replacement of damaged environmental receptors.

We ensure that the affected land is fit for the intended use by implementing remediation measures, including cleaning up spills (e.g., by excavation and clean earth filling) as well as relying on natural attenuation (recovery) based on the respective decision of the environmental authorities. Provisions are included in our accounts for the liabilities related to spills and cover cleaning and remediation costs.

2022 Actions

Total volume of spills



The most significant spill in 2022 was at our Asset Moldova in Romania. In July 2022, a crude oil spill occurred in the Tasbuga mountainous area. On July 12, after heavy rain, the first oil-water mix became visible 600 m downhill from a partially buried pumping pipeline connecting Tasbuga Park to the Albotești Tank Farm. The oil spill extended downhill through a forest, via a concrete gully, and continued for another approx. 300 m in a small stream. The estimated affected area was more than 4 km², underground in the sandstone and above ground along the stream in the forest. Altogether, 198,000 liters of crude



oil were spilled into the environment. After the leak was detected, pumping was stopped immediately and the affected area was comprehensively cleaned up. In order to avoid similar incidents in the future, the incident was thoroughly investigated in accordance with internal regulations.

The majority of our spills occur at OMV Petrom. In 2022, we continued to focus on the Pipeline Integrity Management Program in the Upstream division and embedded the Integrated Risk Register in our current activities. This helped us prioritize interventions for the high-risk pipelines, such as complete or sectional replacement. The Pipeline Inspection program is also in operation and is expanding to include all categories of pipelines, i.e., low- and medium-risk pipelines, and the results obtained will help us better prioritize for the next inspection period. Corrosion Management Plans developed in 2020 and 2021 are now ongoing and being implemented. This has helped improve the integrity and longevity of our pipelines through cleaning, inspection, and introduction of inhibition chemicals, along with new corrosion monitoring techniques. External coatings and cathodic protection are now mandatory for all new metallic pipelines in accordance with OMV Group and OMV Petrom standards and procedures. A pipeline inspection program is in place and functional for all pipelines that are able to be inspected internally. The program is managed and planned in SAP CMMS (Computerized Maintenance Management System). In addition, OMV Petrom continues to reduce the number of kilometers of pipelines through several field optimization projects, which will reduce the risk of exposure by removing numerous aging pipelines while maintaining optimal production.

Outlook

Every year, we assess any occurrences of spills and use any “lessons learned” as a basis for improving our process safety in the coming years. For the significant spill in Romania in 2022, lessons learned included reviewing the risk ranking of pipelines crossing environmental sensitive areas, reviewing pipeline testing procedures, and re-assessing the methodology for inspection for aging pipelines. In 2023, the OMV Group aims to prevent process safety events at all our sites across the globe, ultimately resulting in the reduction of spills. Read more in [Process Safety](#).

Waste

Our production activities generate solid and liquid waste, including hazardous waste such as oily sludge, waste chemicals, and catalysts. Examples of non-hazardous waste include excavated soil, if not containing dangerous substances, as well as mixed municipal waste, paper and metal.

In addition, as a producer of plastics, we are deeply aware of the issue of plastic waste. Too often, unmanaged plastic waste is dumped in unsanitary landfills or burned, therefore increasing the risk of leakage into waterways, lakes, or oceans and thus causing negative impacts on the environment, marine life, and, potentially, human health. This section of the Sustainability Report focuses on waste management in our operations. For more on end-of-life waste, please see the focus area [Circular Economy](#).

Specific Policies and Commitments

According to OMV’s Environmental Management Standard, all OMV Group businesses and activities are required to identify and use the least hazardous material option and to minimize both the use of raw materials and the subsequent generation of waste. The following hierarchy is applied to controlling waste: prevention, preparation for reuse, recycling, other recovery (e.g., energy recovery), and, lastly, disposal in a controlled manner. The disposal of liquids in landfills and the burning of solid and liquid materials in open burning pits or any other location are not permitted.

The OMV Group’s Environmental Management Standard further requires that environmental and social components be identified for the entire life cycle of facilities, including decommissioning and abandonment, so that any future adaptation measures can be identified and planned for. The needs of local communities, including indigenous peoples, are incorporated and addressed throughout all phases of the project life cycle, including during decommissioning or abandonment.

Management and Due Diligence Processes

Application of Best Practices

International industry best practice is applied for the management and treatment of waste, including drilling waste. Where existing local, regional, or national waste management facilities are inadequate, OMV supports third parties in developing their capability.

Recycling

Waste is recovered and recycled where possible, including during site closure and decommissioning. If recycling is not possible, all waste is processed and/or disposed of

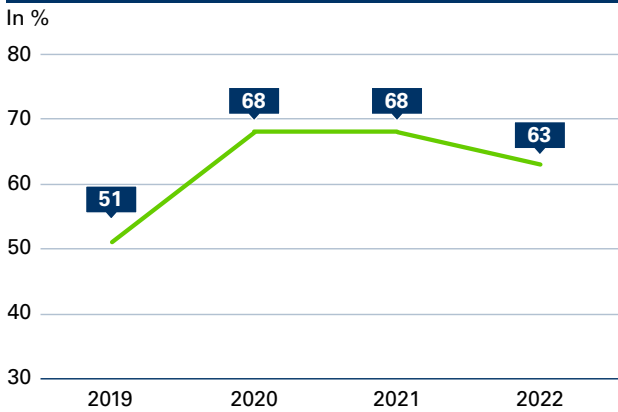


only in licensed facilities or via reputable licensed contractors. Waste contractors are regularly audited.

2022 Actions

The following key activities were carried out across the Group in 2022:

Waste Recovery or Recycling Rate



- ▶ 77% of OMV’s total waste comes from OMV Petrom. OMV Petrom continued to work on site restoration at the remaining two depots in Constanța and Oradea, and started the site restoration of the former Zalău ANRS petroleum products terminal. Over the past few years, 39 former fuel terminals have already been restored, with sites having been remediated to initial preoperational state. In addition to the 222,000 m³ of soil/subsoil contaminated with petroleum products generated and treated over previous years, around 27,575 m³ of additional contaminated soil was excavated and treated in 2022. The treatment is performed using site-specific methods in line with best practice (e.g., bioremediation technologies off site and on site with injection). We achieved a recovery rate of 99% for the contaminated soil treated, which we then used for on-site backfills or directed to other authorized locations. We performed periodic monitoring during and after site rehabilitation, as requested for each site by environmental authorities. The site status (e.g., land covered by grass, soil compaction) is monitored quarterly for one year after our works are finalized. The decontamination work on the former petroleum products terminal in Constanța was carried out in close collaboration and alongside the archeological research conducted by the Museum of National History and Archeology Constanța (MINAC). This was done according to national legislation, and due to the site’s high archaeological potential. During the archeological survey, many artefacts of historical significance were also discovered.

- ▶ OMV Tunisia has focused more on waste reuse and recycling solutions. For instance, old tires are turned into garden planters, thereby avoiding disposal. In addition, a waste management plan for the Waha Central Processing Facility was issued and upgrade actions for its hazardous waste area were implemented accordingly. A composter to reduce and recycle food waste will be installed in 2023.

Outlook

As part of our Strategy 2030, we plan to increase the reuse and recycling of waste from operations. In 2023, we plan to review the Waste Management Plans across the OMV Group.

Biodiversity

Biodiversity supports human and societal needs, including food and nutrition security, energy, development of medicines and pharmaceuticals, and freshwater, which together underpin good health. It also supports economic opportunities and leisure activities that contribute to our overall well-being. Biodiversity conservation provides substantial benefits, such as clean, consistent water flows, protection from floods and storms, and a stable climate. The loss of biodiversity is perilous, and its consequences are immediate. The EU’s biodiversity strategy for 2030 is a comprehensive, ambitious, and long-term plan to protect nature and reverse the degradation of ecosystems. The strategy aims to put Europe’s biodiversity on a path to recovery by 2030 and contains specific actions and commitments.

Specific Policies and Commitments

The OMV Group’s Environmental Management Standard and Environmental and Social Impact Assessment Procedure state that all OMV activities must be conducted in such a way as to cause minimal disturbance to protected areas and to local flora and fauna.

Management and Due Diligence Processes

Risk Assessments

Observed or predicted direct and indirect impacts on biodiversity and ecosystem services (BES) are described and analyzed in environmental impact assessments. BES screenings are carried out at all relevant sites to identify, as far as reasonably possible, the potential presence of nationally or globally threatened species, legally protected threatened or fragile ecosystems, and internationally recognized areas with sensitive biodiversity.

Biodiversity Management Plans

OMV has joined Ipieca’s Biodiversity Task Force, which is working on an update to the guide to developing bio-



diversity action plans. Based on that guide, OMV aims to develop Biodiversity Management Plans for all major operations.

Mitigation and Rehabilitation

In the event of significant observed or predicted impacts, we apply the mitigation hierarchy, and action planning gives priority to avoidance and minimization over the restoration and offsetting of the impact. Mitigation measures might include rerouting of pipelines, for example.

A showcase example of good practice in biodiversity management is the Berling development project (formerly Iris Hades) in offshore Norway. The aim was to avoid any damage to sensitive cold-water coral. Building on available know-how and technology, biodiversity screening and baseline studies were executed as part of the environmental impact assessment. The mitigation hierarchy was applied by selecting the well location, template location, and pipeline routing as far away as possible from any coral colonies. The best available technologies were utilized to minimize any impact on the environment.

In 2022, OMV Petrom continued the cleaning, remediation, and ecological reconstruction works for two former fuel terminals, having started in 2019 (for more information, see [Waste](#)). During this project, we performed periodic monitoring during and after site rehabilitation, as requested for each site by the environmental authorities. Examples of this monitoring include taking samples of soil/subsoil and checking the groundwater in each phase of the project (e.g., excavation, bioremediation). This is carried out on a quarterly basis for one year after our work is finalized.

Working with Third Parties

OMV works locally with NGOs and other third parties on restoration and rehabilitation projects. For example, in 2022, we supported the following biodiversity-related projects in New Zealand as part of our wider Corporate Social Responsibility portfolio. New Zealand has the highest number of threatened indigenous species in the world.¹⁸

- ▶ Partnership with Ngāti Koata and the Department of Conservation for the Moawhiti lake and wetland regeneration project
- ▶ Partnership with the Rotokare Scenic Reserve Trust, creating a predator-free reserve in South Taranaki, thereby protecting the endemic hihi bird (stitchbird) in this reserve located just outside of New Plymouth

- ▶ Partnership with the local hapū at Pohokura to restore and protect the wetlands on site

2022 Actions

- ▶ We began working on a biodiversity framework for OMV. Considering both sector-specific and cross-sectoral guidance documents, we aim to minimize our impact on nature in existing operations, projects, and in our value chain.
- ▶ We again took steps to prevent impacts on sensitive species and ecosystems. For instance, following its environmental impact assessment, the timing for drilling the Oswig exploration well in the North Sea was rescheduled to avoid disturbance to the sand eel during the spawning season. Similarly, in the Borealis Schwechat PV project, the construction works were timed to avoid any negative impact on the breeding skylark population.
- ▶ In 2021, we began mapping all our sites in a formal and harmonized way to determine if any are located in or near protected areas. A first screening in 2022 revealed that this is the case. We will continue to refine the results of this screening and integrate the results into the development of our biodiversity framework.
- ▶ We also continued to implement local biodiversity initiatives, such as our green areas project in Tunisia. Our production sites in Tunisia are in a dry and arid climate with hostile living conditions and a lack of recreation areas. The aim of the project was to plant indigenous trees and shrubs in the desert. In 2020, a project was started in Waha where 512 trees were planted. In 2021, this was expanded to Nawara, where 1,200 trees (mainly native palm trees) were planted in the first year. An irrigation system was installed to support the budding plants. The goal was to provide recreation areas to improve the well-being of personnel and visitors, and to promote forest creation. In the context of extending green zones and the Tunisian National Tree Day on November 13, 2022, around 430 indigenous trees were planted on the sites of the Waha and Nawara Central Processing Facilities. In addition, around 40 trees were planted on the site of the Nawara Gas Treatment Plant. The plan is to extend the tree planting activity in Waha in 2023.

¹⁸ Source: Environment Aotearoa 2019, Ministry for the Environment, <https://environment.govt.nz/publications/environment-aotearoa-2019/>



Outlook

We aim to develop a formal and comprehensive biodiversity and protected areas framework in the coming years. In 2023, OMV will also continue supporting local biodiversity initiatives such as the Ngāti Koata and the Department of Conservation for the Moawhitu lake and wetland regeneration project, and the partnership with the Rotokare Scenic Reserve Trust in New Zealand.

Non-GHG Air Emissions

Exposure to air pollution can affect everyone's health. It is the greatest environmental threat to public health globally. The World Health Organization (WHO) recently issued stricter recommendations on safe air pollution levels in a bid to curb the millions of premature deaths and loss of millions more healthy years of life caused by air pollution.

Specific Policies and Commitments

The OMV Group's Environmental Management Standard stipulates that all OMV Group businesses and activities must understand the impacts of their air emissions on local and regional ambient air quality. Air emissions are required to be monitored, controlled, and minimized in order to mitigate the potential effects on human health and harm to the environment. There are strong legal requirements surrounding air emissions in the EU, which is where all our refineries are located. For instance, the EU does not permit the use of fuels containing sulfur to prevent transport-related SO_x emissions. Sulfur has a significant impact on health, for example sulfur dioxide affects the respiratory system, particularly lung function, and can irritate the eyes. It causes coughing and mucus secretion and aggravates conditions such as asthma and chronic bronchitis.

Management and Due Diligence Processes

Monitoring

In all our refineries, we monitor emissions of pollutants such as SO_x, NO_x, CO, particulate matter/dust, and (NM)VOCs as required by European and national legislation and the respective permits. If emissions are found to be in excess of nationally prescribed limits and/or limits defined in a permit, additional monitoring stations are installed, and measures are implemented. For example, in OMV Tunisia, pollutant emissions from combustion processes such as nitrous oxides (NO_x) or carbon monoxide (CO) have caused great public concern due to their impact on health and the environment. The past decade has witnessed rapid changes both in the regulations for controlling gas turbine emissions and in the technologies used to meet these regulations. Monitoring of the emissions is typically performed with a Continuous Emissions Monitoring System (CEMS), which is a packaged system of gas

analyzers necessary for the determination of gases and particles to stay within Tunisian emissions regulations. Because of this, we installed a pollutant analyzer on the turbines at GTP.

Prevention and Treatment

OMV has long implemented technologies to reduce emissions, such as internal floating roofs to reduce emissions of VOCs. We have been focusing on upgrading such technologies to ensure that they are still effective and reducing emissions. For instance, in 2007, we commissioned a SNO_x flue gas cleaning plant at the Schwechat refinery. With the SNO_x Refurbishment of Wet Sulfuric Acid (WSA) program, in which a solution patented by OMV (two-layer PFA film structure with monitoring system) was implemented, both the reliability and the availability of the flue gas cleaning system could be increased. The flue gas cleaning plant at the Schwechat refinery is used for the removal of dust, and for denitrification and desulfurization of flue gases from the two power plants before they are emitted via the stack. As a first process step, dust is separated via electrostatic precipitators. During selective catalytic reduction, nitrogen oxides (NO_x) are converted into free nitrogen (N₂) and water (H₂O) by injecting ammonia (NH₃). In the third step, sulfur dioxide (SO₂) is oxidized with the aid of a catalyst and reacts with residual moisture to form gaseous sulfuric acid. Finally, the sulfuric acid is condensed in the WSA by means of air cooling and heat recovery. The sulfuric acid obtained in this way is then either sold or used for pH adjustment within the refinery. By applying these process steps, 98% of dust can be separated, more than 96% of sulfur can be recovered, and around 95% of NO_x emissions can be prevented. With the catalyst update in 2022, a NO_x reduction rate of around 95% is now achievable again.

2022 Actions

The following key activities were carried out across the Group in 2022:

- ▶ In Norway, a hybrid jack-up rig was used to drill the exploration well Oswig, which contributed to an approximately 25% reduction of diesel consumption per day. These rigs are provided with battery packs that reduce the use of diesel by approximately 5 t per day, which also translates to reduced emissions. In addition to an average reduction of 16.2 t of CO₂ emissions daily, the installation of a NO_x catalyst reduced NO_x emissions by an impressive 90%.



- ▶ In 2022, Borealis installed a wastewater treatment plant in Stenungsund. The new wastewater treatment unit will reduce the emission of contaminants to the sea and will also minimize VOC emissions to the air, since all treatment steps are covered and enclosed. The new unit includes buffering in two tanks and physical and chemical treatment of the water in Dissolved Nitrogen Flotation (DNF) units. The off-gas from the different steps will be treated by adsorption in carbon filters.
- ▶ OMV Petrom continues to restore sites as it has done previously for former fuel terminals or abandoned facilities. The best practices applied include the use of a water spray curtain, dust protection nets, forced ventilation, off-site bioremediation of the most heavily contaminated soil, and periodic communication with the community and the authorities. In periods of strong wind, OMV Petrom always minimizes dust-producing activities, wets surfaces more thoroughly, and covers the surfaces of on-site biopiles. This subsequently reduces the impact on the air quality. Regarding odor and dust control during soil excavation and transport, OMV Petrom has optimized transportation routes to minimize disturbance to the community, and always secures loads and cleans the wheels at the site exit to avoid the contamination of public roads, and sprinkles the access roads on site.

- ▶ In R&M, the leak detection and repair (LDAR) program in accordance with BAT Reference Documents (BREF) continued to be carried out at the Petrobrazzi refinery. The objective of this program is to reduce fugitive emissions from the plant's technical equipment (e.g., vents, flanges). We continued the 2021 program, which targets accessible fugitive emissions sources from Tank Farm and Aromatic units and includes the screening of inaccessible sources. 92% of the leakages identified could be fixed. The program will run periodically, according to a schedule, in all Petrobrazzi installations.

Outlook

In 2021, we launched a pilot project to develop an Odor Management Plan for one representative facility at an E&P asset of OMV Petrom. We estimate that we will finalize this pilot project in 2023.

Circular Economy

Material Topic: Circular Economy

Decoupling economic growth from resource depletion by recovering and reusing products or waste to make new materials and products, such as recycled or biobased polyolefins

Key GRI

- ▶ GRI 306: Waste 2020

NaDiVeG

- ▶ Environmental concerns

Most relevant SDGs



The OMV Group believes that transitioning to a circular economy will significantly reduce its impact on the environment and its GHG emissions. A circular economy decouples economic growth from resource depletion by keeping materials, resources, and products in circulation and by preventing the leakage of these resources into the environment as much as possible, particularly into the

oceans and landfill sites. Transitioning from a linear “make-use-dispose” economy to a circular “reduce-reuse-recycle” economy will also help curb global warming. Through the efficient use of precious resources, it is possible to recover and reuse by-products or waste by transforming them into new materials and products. This

approach has the potential to greatly decrease associated emissions along product value chains.

In addition to recycling plastic waste and reusing it to make new materials and products, the OMV Group also sees plastics based on renewable feedstock as playing a key role in the circular economy. The use of renewable feedstock lowers the demand for fossil feedstock and considerably decreases carbon footprints. The OMV Group focuses on utilizing waste biomass, such as residual forestry matter that is not in competition with the food and feed chain, and thus does not require the use of additional natural resources such as land or water. If then recycled, such second-generation bioplastics can play a vital role in a sustainable, circular economy and reduce greenhouse gas emissions on two fronts, cutting emissions in the input and in the end-of-life phase.

The creation of a truly circular economy also has wider societal implications. It will provide economic benefits to society by reducing the major financial burden of ineffective waste management systems and pollution man-

agement, and will create new business opportunities and employment at various stages along the value chain. A circular economy will also result in better living and working conditions, and an overall cleaner environment.

Following the acquisition of a majority share in the polyolefins producer Borealis in 2020 and the consolidation of Borealis into the C&M segment within OMV, circular economy is now a cornerstone of the OMV Group's Strategy 2030. By 2030, we plan to establish a production capacity of 2,000 kta of sustainable polymers and chemicals, i.e., polyolefin products or other chemicals derived from plastic waste (either through a mechanical or chemical recycling process) or from biobased feedstock. In parallel, the use of fossil fuels will decrease, as the aim is to reduce oil and gas production levels to around 350 kboe/d and reduce crude distillation throughput by 2.6 mn t by 2030. These fossil fuels would ordinarily also be used to make polymers; instead, more polymers will be based on recycled waste or renewable resources such as biobased feedstock. In 2022, the OMV Group processed 117.8 kt of circular feedstocks.



Target 2025

- ▶ Establish production capacity of 600 kta sustainable (including recycled and biobased) polyolefins and other chemicals

Target 2030

- ▶ Establish production capacity of approximately 2,000 kta sustainable (including recycled and biobased) polyolefins and other chemicals

Status 2022

- ▶ Production capacity of 148.5 kta established

Most relevant SDGs



SDG targets:

8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavor to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programs on sustainable consumption and production, with developed countries taking the lead

9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities

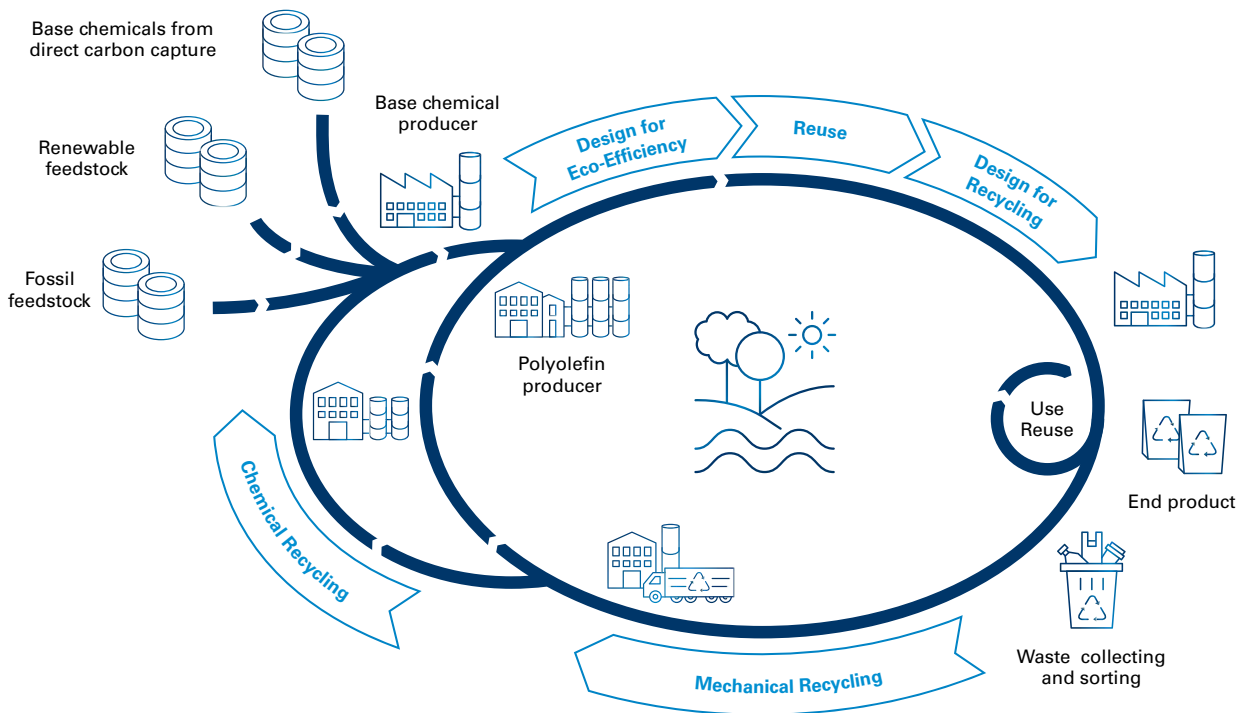
12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution



Through its subsidiary Borealis, the OMV Group is promoting the circular economy across the industry by launching initiatives and participating in activities and platforms that drive recycling options and solutions. Borealis is a core partner in the New Plastics Economy (NPEC), a member of the EU's Circular Plastics Alliance, and has signed a manifesto calling on UN Member States to commit to the development of a global treaty on plastic pollution.

The OMV Group's goal is to take on a leading position in the circularity of plastics and to offer its customers innovative solutions that advance the circular economy. In order to transition to a truly circular and carbon-neutral economy, a variety of solutions will be required to keep products circulating at their highest value, quality, and utility over many lifetimes. This can only be achieved by using a full suite of different, complementary technologies that come into play in a cascading way. This integrated approach is embodied in the Circular Cascade Model:



Design for Eco-Efficiency

This means adopting a fundamental design mindset that starts with minimizing the use of resources during production and maximizing the product's lifetime value. Borealis' foam business is a prime example of eco-efficient polyolefin solutions. This business line is used in industries such as packaging, sports, transportation, and construction, and helps facilitate the transition to a circular economy as it is especially suited to ultra-lightweight foam applications while being fully recyclable.

In 2022, Borealis partnered with Bockatech, inventor of the patented EcoCore[®] manufacturing technology, to develop a new, lightweight cup to encourage the market to switch from single-use to multi-use packaging solutions, thereby reducing packaging waste and carbon emissions. The development, which was showcased at three prime value chain events in Europe, resulted in the signing of the first contracts for three new applications with customers PACCOR and Jokey.

Reuse

Reuse is a core element of circularity, as circular change starts first with reduction and reuse, before recovery and recycling close the loop. This step aims to maximize and extend the lifetime of products that are already in circulation. This will be fostered by leveraging knowledge of plastic use and processing, and by establishing systems and business models designed to encourage reuse.

Partnerships are vital for broadening knowledge about reuse and scaling up activities in that area. As such, in 2022 Borealis strengthened its commitment to reuse by engaging in several collaborative projects with value chain partners and furthered its commitment to the UN Plastics Treaty. In addition, Borealis joined the 4everPack consortium, a two-year research program run by the Finnish institute VTT and funded by Business Finland. The project's focus is the reusable packaging value chain and its relevance in the transition from a linear to a fully circular economy model. Borealis contributes to this project by



providing its expertise in innovative material and packaging design for the selected reuse systems.

Further developments in 2022 include an agreement between Borealis and Red-Use On the Go to develop and implement a circular business model in a reuse environment, supported by digital solutions and mechanical recycling. The partners will gain insights into optimal reuse design and circular material flows in reuse models in the events, B2B services, and takeaway markets. Through smart packaging design, for example using RFID tags or QR codes, data that is crucial for measuring the performance of a reuse system can be retrieved and analyzed.

Design for Recycling

A key challenge in increasing the recycling of plastics is that many products are not intentionally designed for recycling in the first place. For example, flexible packaging often uses layers of different materials, which makes separating and recycling the plastic content extremely difficult. The challenge is to create packaging that uses only a single material, while maintaining or even improving performance. Thus, Design for Recyclability (DfR) emphasizes that a product must be designed with the intention that it can be easily collected, sorted, and recycled. DfR is an important aspect of eco-efficient design and takes a life cycle approach by carefully and intelligently balancing the production, use, and after-use phases of a product.

Inspired by the EU Commission's vision for increased levels of recycling, brand owners worldwide are committing to developing 100% recyclable, reusable, or compostable packaging solutions by 2025. To further DfR, Borealis has developed and actively promotes 10 Codes of Conduct for polyolefin packaging designers. These help designers develop packaging materials that can be successfully recycled and used again, either for the same application or in other products. The Codes are being incorporated into assessment methodologies for recyclability, for example in future modulated Extended Producer Responsibility (EPR) guidelines for packaging.

Borealis also applies its innovation activities to offer alternatives to materials and material combinations that are not recyclable today and collaborates with value chain partners to expand its range of fully recyclable, mono-material solutions. For instance, Borealis worked with W&H, AMAT, and GEA Food Solutions to develop a mono-material, cast polypropylene laminate that is 100% recyclable. This is an ideal solution for the most demanding food packaging applications because it ensures a long shelf life and resistance to high temperatures.

Borealis is an active member of the HolyGrail 2.0 (HG 2.0) digital watermarking project, which has grown already to

more than 170 members by now, including over 40 brand owners and retailers. This initiative, which is driven by the AIM (European Brands Association) and powered by the Alliance to End Plastic Waste, is a pilot project working to prove the technical viability of digital watermarks (i.e., almost imperceptible postage-stamp-sized codes on the packaging) for the accurate sorting of packaging waste as well as to prove the economic viability of the business case on a large scale.

In 2022, HG 2.0 successfully completed tests for Phase 2, in which the prototype digital watermark was tested for speed, accuracy, and detection efficiency, in combination with near infrared and visual spectrum detection. Following the successful trials at two locations, brand owners began to bring products to the market with digital watermarks in Germany, France, and Denmark. Phase 3 of the project will start in the first quarter of 2023 and will include large-scale tests in commercial sorting and recycling facilities, with the polyolefin tests being carried out in Borealis' mechanical recycling facility in Lahnstein, Germany.

Closing the Loop

The potential for product reuse also has its limits. This is when the steps of recovery and recycling come into play in the circular cascade model in order to close the loop on plastic waste.

In 2022, Borealis joined forces with the Reclay Group, international experts in environmental and material recovery management, to found a new entity called Recelerate GmbH. The new organization's mission is to redesign the critical steps of the plastics sorting and recycling system for lightweight packaging (LWP) to speed up circularity, born from a need to meet the rising market demand for high-quality recyclates for use in high-end plastic applications. The new entity will be powered by the Reclay Group's strength in the area of Extended Producer Responsibility (EPR) schemes and Borealis' focus on the growth of a more circular plastic model. Recelerate will open up the supply of post-consumer plastic waste to be recycled by Borealis' proprietary recycling technology Borcycle™, which offers the possibility of providing more high-quality recycled materials to customers and consumers. Recelerate will connect critical partners in the plastic value chain, and through that it will support closing the loop, accelerating growth, and scaling up the use of circular plastics.

The OMV Group is fully committed to broadening the range of circular products. It therefore ranks the development of mechanical and chemical recycling equally, as they are seen as complementary to each other. The Group's ambitions in the area of mechanical recycling lie with its subsidiary Borealis, which continues to work with



partners to develop new technologies for mechanical recycling, with the objective of delivering products with near-virgin quality where possible, and with the lowest carbon footprint (read more in [Mechanical Recycling](#)).

Chemical recycling can extract value from residual waste streams from mechanical recycling and mixed plastic waste streams, which would otherwise be sent to landfill or be incinerated. This process involves changing the chemical composition of the plastic. The resulting synthetic pyrolysis oil can then be used again to make any type of plastic or product. Since it is practically comparable to virgin plastics, it can also serve a more diverse field of applications (read more in [Chemical Recycling](#)).

There is rising demand for both high-quality recyclates and product-based solutions for renewable feedstocks. The OMV Group is committed to supporting producers and brand owners in meeting environmental and regulatory challenges and is therefore continuously developing its circular and renewable product offering. The wide range of advanced mechanically recycled products falls under the Borcycle™ M umbrella, and chemically recycled product solutions are in the Borcycle™ C portfolio. In 2022, Borealis also started offering and marketing products based on renewable feedstock: Borneables™ and Borvida™ (read more in [Renewable Feedstock](#)).

The OMV Group is also committed to reducing plastic leakage. In 2017, Borealis initiated Project STOP (Stop Ocean Plastics) in Indonesia. Co-founded with SYSTEMIQ, this program aims to achieve zero leakage of waste into the environment and increase plastics recycling. Project STOP focuses on the regions with the highest leakage rates and, with the support of industry and government partners, works hand in hand with cities to create leak-free, low-cost, and more circular waste management systems (read more in [Community Investments](#) and on the [Project STOP website](#)).

Governance

Circular economy has been on the OMV Group's agenda since 2015, having become even more important since the acquisition of a majority share in Borealis in 2020. Several aspects of circular economy, in particular mechanical and chemical recycling, are now jointly being developed further. OMV is currently in the process of establishing its governance for this material topic.

The Group's circular economy strategy is closely intertwined with the decarbonization strategy and is overseen by Strategic Planning & Projects, a department directly reporting to OMV's CEO. Additionally, dedicated departments within C&M have been established, such as the Plastic-to-Plastic department, which leads the development

and implementation of OMV's chemical recycling activities and the related feedstock strategy.

With the new Strategy 2030, which was introduced in March 2022, OMV emphasized once again the importance of a circular economy for a sustainable chemicals business going forward. This is the reason why the OMV Group plans to implement a fundamental strategic shift from a linear toward a circular business approach. The C&M business segment will act as the growth engine of the Company. It is to be substantially strengthened, expanded, and diversified, with the aim of developing into a leader in high-quality polyolefin solutions, as well as renewable and circular chemicals and materials. In order to implement this strategy, a new target operating model was defined. This new organization will come into effect in 2023 and forms the backbone of the strategy execution.

The C&M segment will continue to cover the entire chemicals value chain, including responsibility for capturing value from the circular economy. As one of the focus areas in the C&M segment, Circular Economy will form a separate business unit (incorporating the current Plastic-to-Plastic department). This unit will cover business development activities, as well as activities related to circular feedstock.

The department covering the further development of OMV's ReOil® technology will be allocated to the new corporate unit Innovation & Technology, and with that be moved into the direct responsibility of OMV's CEO. Among other things, the new licensing business will also be managed by a separate department within this unit. The establishment of a dedicated corporate function focusing on innovation and technology under the leadership of the CEO is based on the idea that the transformation will be fueled by a high degree of innovation and new technologies, while maximizing the value of the life cycle management of current technologies and the new organization will strengthen these capabilities across the Group.

Most of the OMV Group's circular economy initiatives, especially those regarding mechanical recycling and circular products, are run by Borealis. To accelerate its transition to a circular model, Borealis has a dedicated department called Circular Economy Solutions and New Business Development. This department leads the execution of Borealis' circular economy strategy based on several thematic project focus areas, such as recycling or design for recyclability, in addition to assisting all other Borealis business areas in their industry-specific transitions. Another dedicated business team is fully focused on short- to mid-term business growth opportunities in mechanical recycling, including Borealis' mtm plastics and Ecoplast businesses. The Circular Economy Innovation Studio at Borealis' Innovation Headquarters in Linz,



Austria, remains Borealis' spearhead for technology and innovation, while the Digital Studio in Brussels, Belgium, is creating digital solutions for circularity. This setup enables Borealis to constantly learn and push innovation boundaries, while the business grows by offering customer-centric circular solutions that satisfy today's needs.

In 2018, Borealis launched a dedicated communication platform, EverMinds™. This platform serves to streamline all of Borealis' circular economy-related activities in order to boost their impact and promote familiarity with the topic. The platform facilitates deeper collaboration between Borealis and its partners in the interest of developing innovative and sustainable polyolefin solutions based on the circular model of design for circularity, reuse, and recycling. Further details on Borealis' specific initiatives, management, governance, and development of circular products can be found in the [Borealis Annual Report](#).

The OMV Group has a variety of initiatives in place to raise awareness about recycling among its employees, specifically with regard to recycling of plastics. For instance, informative internal blogs are regularly published, and expert talks are organized with the aim of better informing employees on how to identify plastic recycling codes and the etiquette on how to correctly separate different types of plastic waste so that they will eventually be recycled.

In 2022, the OMV Group held a week-long session called the "Advancing Circular Week" for all employees. This was a purpose-led initiative on the topics of sustainability and circular economy facilitated by OMV's People & Culture department and delivered by internal subject matter experts. One aim of holding this event was to provide its employees with a foundation in recycling and circular economy, while also encouraging them to adopt a stance in their day-to-day activities that will help build a sustainable future (read more in [Employees](#)).

Mechanical Recycling

The diverse properties of plastic enable a plethora of products and applications that make daily life safer, more mobile, and more eco-efficient. These properties allow us to ensure more sustainable living, while the global population grows and demand for plastic increases. However, within the linear economic model, plastic products are made, used, and then discarded. Continuing with this model will lead to more plastic waste and environmental pollution, while putting pressure on the planet's limited resources.

Borealis is one of the world's leading providers of advanced and sustainable polyolefin solutions and a European front-runner in polyolefins recycling. OMV and Borealis are actively developing enhanced technologies to

efficiently recycle two key plastic types, polyethylene (PE) and polypropylene (PP), thereby providing an alternative to the linear "make-use-dispose" economy. Mechanical recycling is one such technology. With mechanical recycling, the plastic is cleaned, mechanically flaked, melted down, and processed into plastic granulate. In an ideal scenario, this material can be used to make the same products again, i.e., a detergent bottle becomes a new detergent bottle. No change is made to the chemical structure of the plastic, which is why the feedstock must be sorted properly and even split into different colors.

Borcycle™ M is Borealis' transformational technology for mechanical recycling, which gives polyolefin-based post-consumer waste a new lease of life. Using advanced mechanically recycled products out of the Borcycle™ M portfolio ensures a lower carbon footprint compared to using fully fossil-fuel-based products. Through Borealis and its subsidiaries (mtm plastics, Ecoplast, and a demo plant operated by a joint enterprise in Lahnstein), OMV operates three mechanical recycling plants. The demo plant in Lahnstein is a joint undertaking by Borealis, Tomra, and Zimmerman, and was commissioned at the beginning of 2021.

Management and Due Diligence Processes

Certification

The Borealis recycling businesses are all certified according to the Europe-wide EuCertPlast certification program for companies that recycle post-consumer plastic waste.

2022 Actions

- ▶ In 2022, Borealis started designing a commercial-scale advanced mechanical recycling plant in Schwechat, Austria. The design will be based on Borealis' own Borcycle™ M technology, which transforms polyolefin-based post-consumer waste into high-performance polymers suitable for demanding applications.
- ▶ Borealis began a partnership with Renasci in 2021, to work on the innovative Smart Chain Processing concept, including a plastic to pyrolysis oils process. The project successfully continued in 2022, with Borealis taking a minority share.

Outlook

In the coming years, OMV will focus on the commercial ramping up of its existing circular portfolio to continuously progress toward its targets. For instance, Borealis' advanced mechanical recycling plant in Schwechat will have the capacity to produce over 60 kta of advanced mechanically recycled polyolefin solutions and com-



pounds per year. The decision was supported by positive feedback from the market on recycled polyolefins delivered by the demo plant in Lahnstein, which is based on the same technology. The front-end engineering design (FEED) stage will be carried out by NextChem, specialists in the field of green chemistry and technologies for the energy transition. Upon successful completion of the FEED phase, Borealis expects to take the final investment decision in the second half of 2023 and to start construction by the end of 2023. The first volumes of recycled polyolefin products are expected in 2025.

Chemical Recycling

Chemical recycling comes into play when mechanical recycling reaches its limits, for example in products where multiple types of plastics are used together. While most rigid plastic waste can be processed quite effectively through mechanical recycling, flexible materials (e.g., plastic film) are still predominantly incinerated or sent to landfill. Chemical recycling is the only way of overcoming this challenge. It involves altering the chemical composition of the plastic to produce pyrolysis oil from plastic waste. This synthetic oil can then be used to make any type of plastic or product. Because the quality of these products is effectively comparable to virgin plastics, they can also be used in tightly regulated areas such as the food and medical industries. Plastic waste thereby becomes a valuable raw material.

OMV has been exploring the potential for utilizing post-consumer plastics, i.e., polyethylene, polypropylene, and polystyrene, through chemical recycling since 2011. The Austrian Research Promotion Agency has also contributed to this effort with subsidies covering part of the project investment. The first test facility was launched in 2013. In 2018, the next-level test facility – the ReOil® 100 pilot plant – began fully refinery-integrated operation with a processing capacity of up to 100 kg/h and a production capacity of up to 100 l/h of pyrolysis oil.

In 2021, the final investment decision (FID) was made to build a prototype of a ReOil® demonstration plant at an intermediary refinery scale with a design capacity of 16 kta. This plant, called ReOil® 2000, will be fully operational in 2023. To finance this project, OMV entered its first-ever green loan agreement. This is aligned with the green loan principles and is based on a green and project-specific external due diligence appraisal, called a second party opinion, and a project-specific green financing framework. The plant will be fully integrated within the petrochemical production units at the Schwechat refinery in Austria, enabling OMV to guarantee the best use of resources, maximum efficiency, and the highest industrial safety standards, while creating around 50 new jobs. It represents a crucial step in developing ReOil® into a com-

mercially viable, industrial-scale chemical recycling technology with a processing capacity of up to 200 kta by 2026/2027.

The pyrolysis oil produced in the ReOil® plant is further processed into monomers in the refinery's steam cracker to produce high-quality base chemicals for the plastics industry. At Borealis, these monomers are then converted into high-grade polymers. Borcycle™ C represents the portfolio of chemically recycled polyolefins that Borealis is offering to the market. These products are suitable for very demanding applications such as food contact materials. Borcycle™ C is not only the label for the portfolio of chemically recycled products offered to its customers, but also the designated name for Borealis' own technology solutions for chemical recycling. Along with Borcycle™ M, in which "M" stands for mechanical recycling, it forms the Borcycle™ portfolio of all-round solutions for plastics circularity based on the Borcycle™ technology suite launched in 2019.

Management and Due Diligence Processes

The innovative ReOil® process uses moderate pressure and normal refinery operating temperatures to convert used plastics into pyrolysis oil, which is then used to produce high-quality base materials for the plastics industry.

Selection of Feedstock

The ReOil® facility can process different forms of plastic waste, ranging from household waste to waste from commercial and industrial sources. The main feedstocks are polyethylene (e.g., films), polypropylene (e.g., food packaging and car parts), and polystyrene (e.g., packaging and insulation materials). Currently, the recycled feedstock is sourced almost exclusively from Austrian waste sorting facilities.

Technology

Plastic is an excellent heat isolator with poor heat transfer properties, compared with glass or metal. These properties, which make plastic desirable in everyday life, also make it difficult to break down. OMV's proprietary ReOil® technology is based on pyrolysis, a well-known refinery process during which thermoplastics are first melted and then cracked at a temperature of about 400°C. This means that long-chain hydrocarbons are cracked into shorter-chain light hydrocarbons. One of the inherent challenges in pyrolysis stems from the fact that, compared with glass or metal, plastics are notoriously difficult to melt, and once melted, are highly viscous, which impairs the heat transfer necessary for pyrolysis. The ReOil® technology is unique compared to that of competitors because of the use of an innovative heat transfer technology, which allows the viscosity of the molten plastic to be reduced



and thus heat transfer to be improved. As a result, the ReOil® process is scalable to industrial scale (up to 200 kta). Thanks to the integration into OMV's refinery in Schwechat, Austria, ReOil® also achieves higher yields than other non-integrated chemical recycling technologies.

Certification

The ReOil® pilot plant and the ReOil® 2000 demo plant are both certified according to the International Sustainability & Carbon Certification (ISCC). ISCC PLUS is a sustainability certification that is well-recognized by all stakeholders in recycled and biobased materials, providing traceability along the supply chain and verifying that companies meet environmental and social standards. Compliance with the certification means that for each ton of circular feedstock fed into the ReOil® plant and replacing fossil fuels, a certain proportion of the output can be classified as circular by using the mass balance approach.

Emissions Reduction

In 2021, OMV commissioned a life cycle assessment (LCA) to determine the CO₂ reduction potential of its ReOil® chemical recycling technology versus incineration. The LCA was conducted by the Fraunhofer Institute for Environmental, Safety and Energy Technology (UMSICHT) and the Fraunhofer Institute for Chemical Technology (ICT) according to ISO standards 14040 and 14044, and independently peer-reviewed by three world-leading institutes. The LCA analyzes the different treatments of one ton of pre-sorted mixed plastic waste on waste-to-gate level, starting with the collection of waste and ending with the production of polymers and energy. The LCA compares two systems ensuring the same outputs: (i) a linear economy, where waste goes to incineration producing thermal energy and electricity, and where polymers are produced from fossil sources, vs. (ii) a circular economy, where these waste streams are chemically recycled, and the same amount of thermal energy and electricity is produced based on the expected future energy mix in Austria. The LCA shows significant benefits of the circular economy system: 34% of CO₂e emissions could be saved by 2030 if waste streams that are currently going to incineration are chemically recycled using the ReOil® technology.

2022 Actions

The following key activities were carried out across the Group in 2022:

- ▶ OMV started discussions with ALBA Recycling, a raw materials provider and leader in recycling and zero waste solutions, to jointly build and operate an innovative sorting plant in Walldürn, Germany. The collaboration will secure the delivery of suitable feedstock for chemical recycling from ALBA Recycling to OMV to help close the loop for plastic waste. An innovative, state-of-the-art sorting plant designed by ALBA Recycling will have the capacity to process >200 kta of post-consumer mixed waste into suitable feedstock for the production of virgin polyolefins. This innovative sorting process facilitates the further extraction of polyolefins from a waste fraction that currently requires incineration. It has already been tested on an industrial scale and the output has been successfully processed as feedstock in OMV's ReOil® pilot plant. This strategic partnership combines the complementary strengths and capabilities of both parties, with the aim of taking another step toward a world without waste. The final investment decision (FID) is expected by mid-2023.
- ▶ In November 2022, OMV and Wood, a global leader in consulting and engineering solutions in energy and materials markets, signed a Memorandum of Understanding (MoU) to enter into a mutually exclusive collaboration agreement for the commercial licensing of OMV's proprietary ReOil® technology, with the target of agreeing on a binding cooperation by mid-2023. Both companies intend to bring the ReOil® technology to the market together and explore the potential to integrate some of Wood's other complementary technologies. The companies will do so by establishing a joint "technology and engineering delivery" team, which will support clients through the entire process of adopting and successfully implementing the technology at their sites. ReOil® licenses will be provided with full asset life cycle support.



- ▶ In April 2021, Borealis started a feasibility study for establishing a chemical recycling unit at its location in Stenungsund, Sweden, to increase supply of chemically recycled feedstock for the manufacture of more circular base chemicals and plastic products. The study was carried out together with project partner Stena Recycling, the leading recycling company in northern Europe and an expert in the development of sustainable circular solutions in all types of operations. A grant was received from the Swedish Energy Agency to co-fund the study, which evaluated the optimal technology for the chemical recycling unit and its integration in the cracker at the existing Borealis production site in Stenungsund. In 2022, Borealis selected the engineering company and technology providers for the further development of its chemical recycling project in Stenungsund, Sweden. For example, a license agreement with Axens was signed for the Rewind[®] Mix process to purify and upgrade 50 kta of pyrolysis oil produced from plastic waste and to turn it into perfect feedstock for steam cracking. Additionally, the Swedish Energy Agency granted new funding in the amount of EUR 5.1 mn to support the final study. Subject to a positive final investment decision, the chemical recycling unit is planned to start commercial operation in 2025.
- ▶ In the course of 2022, Borealis and ITC Packaging, a leading European manufacturer of thin wall packaging for food contact applications, have jointly developed a series of new and more sustainable rigid packaging formats that are suitable for food contact. The products use resins from both the Borcycle[™] C and the Borneables[™] portfolios to upgrade a number of iconic food packaging formats found on European supermarket shelves, primarily in the ice cream and ready-to-eat segments. These more sustainable formats containing chemically recycled polypropylene and renewable-based polypropylene were launched in record time in the course of the year. More and more brand owners and converters are keen to find ways to reduce their carbon footprint by enhancing the sustainability of their packaging. At the same time, ensuring the safety of food contact packaging is crucial. Both requirements are being fulfilled by the combination of chemically recycled and renewable-based materials.

Outlook

Since the first ReOil[®] trials in OMV's own laboratory, there has been a lot of ongoing development. The ReOil[®] 2000 demo plant will become operational in 2023 at OMV's refinery site in Schwechat, Austria, with a capacity of 16 kta. As a next step, the OMV ReOil[®] process will be developed into a commercially viable technology on a large industrial scale by 2026/2027. At that time, up to

200 kta of plastic waste will be processed. Furthermore, it is planned to launch the first ReOil[®] licenses to the market in the course of 2023/2024, marking an important next step in emphasizing circularity and chemical recycling in the industry.

Renewable Feedstock

Together with partners, OMV is actively pursuing the development of industry-scale projects to produce bio-fuels, biochemicals, and bioplastics from renewable feedstock, including waste streams. Waste biomass, such as residual agricultural, forestry, and wood processing matter, or mixed municipal waste are not in competition with the food and feed chain. While the conversion of such waste biomass into high-value products is often technically challenging, the resulting benefits are a significant reduction in CO₂ compared with fossil fuels and local resource utilization that creates value. The biobased feedstock, which is used at OMV's subsidiary Borealis in order to produce sustainable polyolefins, is currently entirely derived from waste biomass such as residual agricultural processing matter or collected waste streams and is not in competition with the food and feed chain. These polyolefins are marketed to the end customer under the portfolio name Borneables[™].

In this section, the focus is on plastics based on renewable feedstock. For more information on energy products based on renewable feedstock, please refer to [Energy Transition](#).

Management and Due Diligence Processes

Certification

The Borneables[™] portfolio is certified according to the International Sustainability & Carbon Certification (ISCC), by applying the mass balance approach. This means that the materials are not physically segregated in the production processes throughout the entire supply chain, but they are separated in bookkeeping to provide a verifiable basis for tracking the amount and sustainability characteristics of circular and/or biobased content in the value chain. The production location in Antwerp, Belgium, received ISCC PLUS certification in 2022, giving Borealis in total seven accredited European production locations and an even broader production base for mass-balanced products, for example the Borneables[™] and Borcycle[™] C product ranges.

Life Cycle Assessment

With the new life cycle assessment published in 2021, Borealis demonstrated that Borneables[™] is especially suited to reduce carbon emissions. The assessment showed that the greenhouse gas emissions of Borneables[™] polypropylene and polyethylene go beyond carbon neutrality and can be reduced by at least



120% from cradle to gate (meaning all the steps from the sourcing of raw materials to products leaving Borealis' production site) compared to fossil-fuel-based polypropylene and polyethylene. According to the LCA's findings, using Borneowables™ substantially reduces a product's carbon footprint by at least 1.9 kg CO₂e for every kilogram of polymer. This is possible while offering the same high performance levels as virgin polyolefins and the ability to be recycled in the same way.

2022 Actions

Over the course of 2022, OMV's subsidiary Borealis continued to commercialize the Borneowables™ portfolio. Some significant developments include:

- ▶ Collaboration with pipe manufacturer Uponor, enabling it to use Borneowables™ to create the world's first cross-linked polyethylene (PE-X) pipes based on renewable feedstock. The pipes have an unprecedented carbon footprint reduction of up to 90% when compared to conventional fossil fuel-based PE-X pipes, which marks a major step forward in helping companies in the building and construction industry achieve their sustainability targets. Similarly, Nupi Industrie Italiane (NUPI) selected Borneowables™ for the next generation of its piping solutions for domestic plumbing and heating, as well as heating, ventilation, and air conditioning (HVAC) systems designed to perform under higher stress conditions and temperatures.
- ▶ Borealis and Trexel, a leading expert in foam injection and blow-molded parts, co-developed a new plastic bottle based on a grade from the Borneowables™ portfolio. The bottle is reusable and designed to be fully recyclable.
- ▶ Borealis also worked with the Finnish ice cream company Froneri and the German packaging specialist PACCOR to produce packaging molded from Borneowables™ for the Aino brand of ice cream. The innovative mono-material packaging is also 100% recyclable.
- ▶ In June 2022, Borealis launched the Borvida™ portfolio of circular base chemicals, including ethylene, propylene, butene, and phenol. The portfolio is both complementary to and the building block for the Borneowables™ range. Initially, the Borvida™ portfolio comprised Borvida™ B, from non-food waste biomass, and Borvida™ C, from chemically recycled waste. Going forward, the range will also evolve to include Borvida™ A, sourced from atmospheric carbon capture.
- ▶ Borealis' collaboration with LanzaTech, Technip Energies, and the On footwear company has taken its first steps toward capturing and using atmospheric CO₂ as a feedstock. Technology from LanzaTech captures carbon monoxide emitted from industrial sources, such as steel mills, before it is released into the atmosphere, and ferments it to liquid ethanol. The ethanol is then dehydrated to create ethylene, which Borealis polymerizes to become EVA (ethylene vinyl acetate), the versatile and lightweight material that On starts working with to create a performance foam for shoes.
- ▶ In February 2022, Borealis received EUR 20 mn of funding from Business Finland to launch the innovative Sustainable Plastics Industry Transformation (SPIRIT) program. SPIRIT aims to drive the transformation of the plastics industry in Finland by replacing conventional fossil-fuel-based feedstock with renewably sourced alternatives, developing technologies and processes for mechanical and chemical recycling of plastics, and decarbonizing production operations through electrification, use of hydrogen, and renewable energy sources.
- ▶ Borealis joined the Renewable Carbon Initiative, which aims to support and accelerate the transition from fossil carbon to renewable carbon for all organic chemicals and materials. The initiative aims to bring stakeholders together, provide information, and shape policy with the aim of achieving a climate-neutral circular economy.

Outlook

By 2030, OMV plans to establish a production capacity of approximately 2,000 kta of sustainable polymers and other chemicals, including biobased polyolefins. To achieve this, OMV will build up capacity for the procurement of sustainable feedstock and develop and implement a sustainable product portfolio for biobased polyolefins.