



Annual report 2019

Fundacja PlasticsEurope Polska

**PlasticsEurope**  
Stowarzyszenie Producentów Tworzyw Sztucznych

3

**INTRODUCTION**

5

**FROM THE EUROPEAN  
PERSPECTIVE**

7

**PLASTICS  
- INDISPENSABLE  
MATERIAL FOR  
SUSTAINABLE  
DEVELOPMENT**

25

**INFORMATION  
- PROMOTION  
- EDUCATION**

37

**PLASTICS  
- FACTS AND FIGURES**

54

**ABOUT  
PLASTICSEUROPE  
POLSKA**



**Jaap Rabou**  
President of PlasticsEurope Polska\*

\*till end of August 2020

## **Ladies and Gentlemen, Dear Suppliers, Converters and Plastic Users!**

While writing this short introduction to the Annual Report of PlasticsEurope Polska Foundation about activities of our industry in 2019, I work remotely, from my home-office, and the world from today's perspective is looking so much different than even half a year ago. Although, this publication is covering last year, I cannot ignore in such a situation the COVID-19 pandemic, which dominated 2020, and write few words about it, because it is affecting so many people around the world, both privately and professionally. We are experiencing extreme challenges, and the plastics industry is no exception. At the same time, the best of people, the best of our industry and the best of our

products are being recognised today. Business agility and flexibility are playing a key role more than ever.

For some time, from various sides we have been hearing more and more often positive comments about the advantages of plastic, including single-use products. This relates to the value and functionality of plastics, mainly in the context of ensuring hygiene, health and safety. Our education campaign in this area, which we have been conducting for many years, is now starting to bring results and is reaching the public and other stakeholders outside our industry. Being part of the plastics industry, we can feel all proud and privileged that we can contribute with our products to the health and safety of some many people around the world.

The PlasticsEurope Polska Foundation in 2019 developed its activities in many areas. Education of the young generation, building relationships with our local communities, speaking in one common voice on industry issues to key decision makers, as well as strengthening our position in Central and Eastern Europe were the main guidelines and goals pursued by the PlasticsEurope Polska Foundation last year. As part of building the polymer alliance, we also focused on cooperation with various other organisations active in our value chain.

In 2019 the plastics industry in Poland was again intensively developing. I would like to thank all the member companies of the PlasticsEurope Polska Foundation for their contribution. I also express my appreciation and gratitude to the Foundation team for the energy and engagement with which they carry out our joint mission.

Wish we all stay healthy, strong and will preserve!

## Collaboration is key



**Dr. Ingo Sartorius**  
interim Director General,  
PlasticsEurope Central Region

During these times we experience shattering times for our industry: The European plastics industry has come under severe pressure due to the Covid-19-pandemia. At the same time, legislative restrictions and regulations concerning plastics are being even discussed or enforced throughout Europe. In order to form an effective counterweight, intensive cooperation in the value chain as well as with important stakeholders is essential – also and especially across national borders. In this context, the cooperation within the Central Region and particularly between PlasticsEurope Polska and PlasticsEurope Deutschland is crucial when it comes to exchanging expertise and experiences, such as specific legislative procedures or the awareness-raising campaign for water protection. It is more than evident how well our cooperation works: For instance, in the past few years, the environmental activist Dominik Dobrowolski has succeeded in bringing his Recycling Rejs in support with PlasticsEurope Polska, also to Germany. He took part in CleanUp events, in which the athletes of Team Kunststoff, the German sport sponsoring initiative, were involved. These important cooperations send a clear signal towards increased strength of our industry to jointly achieve successful awareness in the society. In order to maintain the competitiveness of our European and globally-oriented companies, to secure the added value of our industry in the EU and to safeguard jobs, the following is outstanding: There is a strong need for collaboration of our industry, not only as shown in the successful example of the Central Region, but also in the full value chain and among stakeholders and people such as administration, academia, sports, NGOs, media etc. In conclusion, it is essential that our close cooperation within the Central Region continues. In this way our industry will be strengthened and successful.





**PLASTICS**  
**- indispensable material**  
**for sustainable development**

Today, it is difficult to imagine the functioning of technologically advanced societies without plastics. These modern materials are used in countless products from nearly all industrial sectors such as packaging, building & construction, automotive, electrical and electronic industry, medicine and many other sectors producing goods that improve consumer living standard and safety. As inherently versatile and innovative materials, plastics play a key role in a sustainable and resource-efficient economy, even if they are often unfairly regarded as non-ecological.

However, with properties such as durability, being light weight or easily treated and processed, in virtually all areas of life, we have innovative products and solutions available that enable us to rationally use our resources, help save energy and reduce greenhouse gas emissions, thus contributing to climate protection. In the transport sector, the small weight of plastic parts translates into lower fuel consumption and reduction of greenhouse gas emissions. In the construction sector, plastics are used to produce efficient and durable insulation systems, window frames or energy and water saving pipe systems. Above all, plastic packaging plays an important role in ensuring food health and safety as well as in reducing food losses and waste during transport to the consumer and in households. In other words, plastics allow us to achieve more with fewer resources and energy. However, all these advantages and benefits of using plastics are veiled by visible plastic waste, improperly managed or present in the environment as a result of littering. This is currently one of the most important plastics related challenges. The introduction of comprehensive and systemic solutions for plastics recovery is a precondition to fully take advantage of the potential of those materials. Closing the loop of circular use of plastics by reusing or recycling them will boost the competitiveness of the European economy, help tackle climate change and achieve UN Sustainable Development Goals.



The concept of circular economy, which entered into the practical implementation stage in Europe in 2018 along with the publication of a Circular Economy Package, considers plastics as one of 5 elements crucial for efficient implementation of that concept. The European Commission document titled “The European Strategy for Plastics in a Circular Economy” presents a specific vision where a smart, innovative and sustainable plastics industry “brings growth and jobs to Europe and helps cut EU’s greenhouse gas emissions and dependence on imported fossil fuels”\*. The effectiveness of that strategy is based on 4 main pillars, which assume an increased profitability of recycling, reduced amount of generated plastic waste, fight against the littering of marine environment, and the growth of investment and innovation, which will increase the degree of returning plastics to circulation. In response, the European plastics industry, in its Plastics 2030 Voluntary Commitment, has presented a set of ambitious targets and initiatives representing the plastics industry’s contribution to achieve a fully circular economy. It focuses on the prevention of loss of plastics pellets and discharge into the environment (the Operation Clean Sweep® program), improving resource efficiency of plastics applications through life cycle thinking, contributing to a step change in understanding and turning plastic waste into new resources, and the search for alternative raw materials for plastics production.

\* “The European Strategy for Plastics in a Circular Economy”, section 3



## Zero pellet loss

*Operation Clean Sweep*<sup>®</sup> (OCS) program pertains to the proper management of products – plastics pellets. Pellets are the most common form in which plastics are produced and then sent from factories to distribution centers and final customers – plastics converters. The industry’s ambition is to eliminate plastics pellets spillage and release into the environment at each stage, from production through storage and transport to processing. It is therefore important that the entire plastics value chain, be they plastics manufacturers, logistics providers, transporters, and foremost plastics converters implement pellet management schemes so as to minimise any pellet loss and discharge into the environment.

PlasticsEurope Polska promotes *Operation Clean Sweep*<sup>®</sup> in Poland and helps enterprises which implement such schemes, for example by organising training sessions for personnel who manage OCS in companies.



## ***Common voice***

*Since the beginning of its operations, the PlasticsEurope Polska Foundation has collaborated with industry associations and other organisations active in Poland in matters important to the plastics sector; these partners include the Polish Chamber of Chemical Industry, the Polish Chamber of Commerce, the Polish Union of Plastics Converters, associations from various industries (such as insulation or packaging), as well as recovery organisations and organisations for recycling and energy recovery sectors. In 2019, meetings and joint activities involved, for instance, analyses and comments on current legislative issues such as the Strategy for Plastics or the SUP Directive, as well as fostering energy savings in the construction sector, including the use of plastics insulation.*



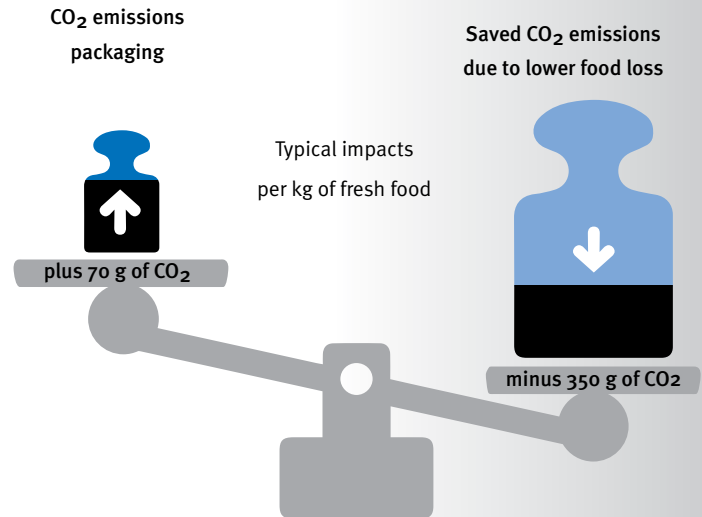
**Kazimierz Borkowski, PhD. Eng**  
Managing Director  
of the PlasticsEurope Polska  
Foundation



## Plastic packaging – is there an alternative?

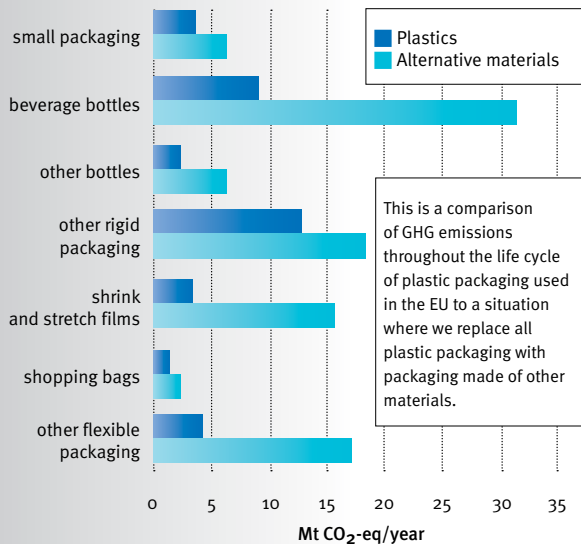
Plastic packaging has its important position in the Circular Economy. The growing use of plastics in the packaging sector cannot be explained by low costs, good health properties or good marketing only. The main reason for their success is that plastics, from a technical point of view, are some of the most versatile materials we presently have. They are lightweight and flexible, and can be formed to take on various, desirable shapes. They are also strong and durable, so the transport of goods in plastic packaging is safe and easy. Can you imagine, for example, humanitarian aid sent to dangerous, distant regions of the world in heavy, nondurable packaging?

By packing food in effective and lightweight plastic packaging, we can exert a stronger impact on the environment (+70 g of CO<sub>2</sub>), but the benefits (emissions saved) of less food waste are much higher (-350 g of CO<sub>2</sub>)



Source: denkstatt

The environmental impact of plastic packaging (regardless of type) is much smaller than that of packaging made from other materials



Source: denkstatt GmbH, the report titled “The impact of plastic packaging on energy consumption and greenhouse gas emissions in Europe”, 2011

On a large scale, plastics are used for practical implementation of the sustainability concept, as plastic packaging extends the shelf life of goods and products stored in warehouses and on supermarket shelves. In developing countries, up to 50% of food resources are wasted because, among other reasons, modern packaging materials such as plastics are not used widely enough for packaging, protecting and extending the shelf life of food products. In most developed countries, where much more plastic packaging is used, these losses are reduced to as little as 3%. In addition, the use of plastic packaging generates considerable fuel savings when transporting goods, as lightweight plastic packaging constitutes only 3.5% of total product weight, whereas packaging made of other materials can weigh even ten times more. Moreover, in the last 10 years, the average weight of plastic packaging has dropped by around 28%.

## Packaging in the Circular Economy

Packaging and the management of packaging waste are amongst the priorities of a Circular Economy. The new recycling targets have been introduced: for all packaging 65% to be achieved by 2025 and 70% by 2030. For plastic packaging, the new targets are 50% and 55%, respectively. The plastics industry, together with the packaging value chain, focuses its efforts to adapt plastic packaging to Circular Economy requirements, such as multiple reuse of the largest possible group of packaging, or maximum recyclability.

One of the tools that help to achieve these targets is eco-design of packaging, that is designing in consideration of environmental aspects throughout the life cycle. This includes such areas as the choice and use of the raw materials, production and packaging, transport and distribution, usage, and the post-use phase including waste management.

The plastics industry, which has pledged in the Plastics 2030 Voluntary Commitment to take part in the eco-design development, is working on the issue on many different levels, e.g. within the Polyolefin Circular Economy Platform, VinylPlus and Styrenic Circular Solutions, platforms which develop specific solutions for various groups of polymers, or by supporting the CEFLEX project devoted to the recycling of flexible packaging. It also participates in the works of the Circular Plastics Alliance (CPA), an initiative proposed by the European Commission in the autumn of 2018, which aims to extend recycling and solve the issue of too low demand for recyclates in Europe. Works of the CPA are to help create conditions which will allow at least 10 million tonnes of recycled plastics to enter the market by 2025. In addition to the eco-design, CPA is involved in such issues as the collection and sorting of plastic waste, the content of plastic recyclates in products, research and development (in areas such as chemical recycling), and monitoring the development of the European plastic recyclates market.

Two other important packaging related issues in the context of the Circular Economy are Essential Requirements for Packaging (i.e. general principles for the production of packaging and materials used, reuse of packaging, and recovery of packaging waste) as well as the issue of Extended Producer Responsibility (EPR). The new approach to the EPR defined by the Circular Economy is above all supposed to improve the efficiency of packaging waste management. It also includes the extension of the EPR to new product groups (e.g. those indicated in the Single Use Plastics Directive) and the introduction of a variable fee depending on product recyclability (eco-modulation fee). The new EPR systems should be in place by 2023 at the latest, whereas the European Commission's legislative proposal for Essential Requirements is expected already in 2021. The plastics industry along with the whole packaging value chain points to a few important factors that should be taken into account when setting the requirements.



First of all, the packaging should be considered together with the product packaged (holistic approach). The packaging serves multiple functions which we cannot forget when creating a design with regard to environmental protection, as this is the appropriate packaging that allows us to avoid, for example, the loss of food, which even taken alone is a measurable benefit from the environmental point of view. The Essential Requirements and the rules of modulating the EPR fee should be based on available data regarding costs (evidence-based approach), consistent throughout the EU, and formulated flexibly enough to allow for including innovation in the methods of sorting and recycling as they emerge on the market. It is also necessary to harmonise the key definitions such as “recycling”, “recyclability”, “necessary costs of waste disposal” or “reuse”, which should as far as necessary be consistent with the definitions used and accepted in non-EU standards. Another important element is the appropriate implementation of laws and enforcement of the rules of the Essential Requirements (today only a few European countries implement and enforce penalties for deviation from the existing Requirements) as well as a harmonious implementation of parallel regulations such as requirements for food contact materials (FCM) or CEN standards.

PlasticsEurope Polska takes an active part in the ongoing discussion over the new EPR system in Poland, which is to replace the current ineffective system which does not provide any support for recycling. The industry fosters solutions based on market mechanisms, which will be controlled by market operators. The proposals given by the Polish legislator are oriented to an EPR being entirely organised and controlled by state administration, but both proposals include a variable fee that promotes higher recyclability of packaging.

PlasticsEurope Polska actively translates the experience from those consultations and discussions with administrative authorities into specialised conferences, industry fairs (e.g. Plastech, Plastinvent, Plastpol, Envicon) and meetings arranged by member companies. In the discussions and debates held last year, representatives of the Foundation presented the position of industry on the circular economy package, indicated chemical recycling as a way to achieve higher recycling targets for plastic packaging waste, and emphasized the importance of eco-design of packaging.



## SUP Directive - what next?

The Single Use Plastics Directive, adopted in mid-2019, imposes a number of restrictions on disposable products made of plastics (tableware, cutlery, bottles, etc.), but also some single take-away packaging, cigarette filters, wet tissues, etc. We are all aware that these products have become part of our civilization, being somewhat a consequence of the consumer lifestyle adopted by the society. However, the problem consists of the rapidly growing amount of waste from those products after their short life cycle as well as the increasing littering of the environment. From the beginning, the plastics industry has called to fully use the value of plastics by reusing the products or returning them to circulation by waste recycling. Where possible, we should extend the life cycle as much as possible and move from single-use products to reusable products (e.g. beverage cups or bottles). Such changes are difficult as they often force consumers to abandon their favourite consumption style (such as the takeaway coffee), and the sectors providing these services must invent new solutions and incline customers to accept them. According to the SUP Directive, the European Union countries have 24 months to implement the provisions of the directive in their national legislation, so this should take place by July 2021. In addition, these local implementations should be harmonised in the European scale so not to disturb the integrity of the European single market. As the SUP Directive was prepared too hastily, the preparation did not include all the stages required of Better Regulation principles, and therefore the directive is imprecise, even when referring to basic definitions. Being aware of it, the legislators have appointed a team of experts to develop guidelines for implementation of the SUP Directive (so-called SUP Guidelines), which should make it easier for member states to transpose the directive. Experts from PlasticsEurope participate in the activities of the working group in Brussels, carrying out parallel consultations with industry representatives in various countries of Europe. PlasticsEurope Polska Foundation took an active part in those consultations and commented on the matter at national forums (official position sent to the Ministry of Development, participation in SUP consultations organised by the Ministry of Climate).



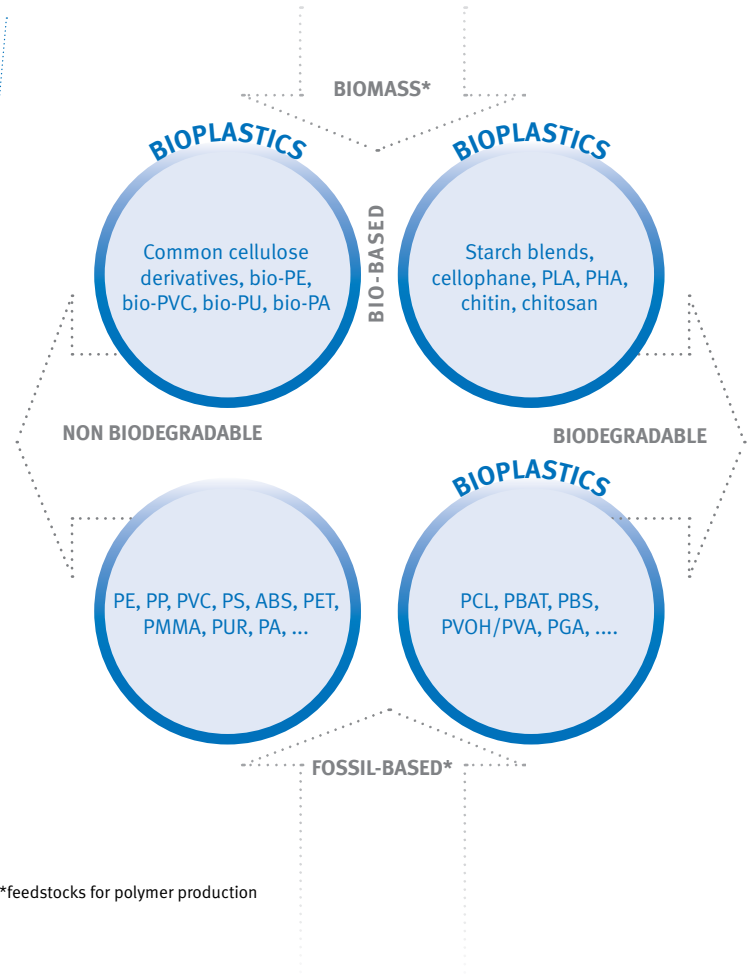
## ***New sources of raw materials***

*Conventionally, plastics are produced from non-renewable fossil fuel raw materials (crude oil or natural gas). In response to the calls to reduce the use of non-renewable resources, the plastics industry has been looking for new raw materials for years to enable a more sustainable production of plastics. The trend was established with the implementation of the Circular Economy concept, and the maxims of the Circular Economy such as resource saving or reuse acquired a new meaning. To maximise the savings of non-renewable resources in plastics production, developments are taking three different directions: the use of bio-resources, the use of plastic waste, and the use of CO<sub>2</sub>/CO in chemical production. For instance, CO<sub>2</sub> is already used as a raw material for the production of polyurethanes.*



## Bio-resources

Bio-resources derived from agricultural products (such as maize or sugar cane) or from biomass waste (lignocellulose transformed in chemical or enzymatic processes) may be used to produce polymers. Products such as biomass-derived hydrocarbons can also be used as a cracker input in conventional refining processes. Bio-resources are usually quite expensive, but their added value is a smaller carbon footprint (renewable carbon coming from plants). Plastics derived from bio-resources are often called “bioplastics”. We should point out, however, that the term “bioplastics” covers two types of materials: bio-based plastics, which are polymers obtained from renewable resources, and biodegradable plastics, which are polymers that decompose in specific conditions under the action of microorganisms. Although all bioplastics have their environmental benefits, the bio-derived and





biodegradable plastics should not be confused. Unfortunately, in public discussion the two terms are very often used imprecisely. Not only does it lead to many misunderstandings but may also cause considerable damage to the environment. For example, biodegradable plastics waste should be sent for composting, since when mixed with other plastics waste it virtually prevents its recycling. On the other hand, contrary to common opinions, the use of biodegradable materials for the production of various products (e.g. single-use items) will not solve the problem of littering. Biodegradable plastic waste abandoned as garbage will not spontaneously biodegrade in the environment. The decomposition of biodegradable materials takes time and must be carried out in special composting plants at an increased temperature and humidity. The requirement to properly label bioplastics, so that the end users have no doubt what material they are handling, has been included in the New Circular Economy Action Plan.

## Chemical recycling

Today the most prospective direction of searching for new sources of raw materials for plastics production is chemical recycling (also referred to as feedstock recycling), where plastics waste is transformed into basic chemicals. The decomposition of polymers into simpler substances leads to the formation of, e.g liquid hydrocarbons or gases, which can be used to produce new plastics or other chemicals. Depending on the type of waste, chemical recycling uses many methods and technologies based on pyrolysis, gasification and depolymerisation (the latter converts plastics waste back into monomer for the production of virgin plastics).

Chemical recycling is a particularly attractive form of waste management, as it is suitable for those fractions which cannot be sustainably recycled by mechanical processes – so for that portion of plastic waste which is sent to landfills or for energy recovery. Raw materials obtained in chemical recycling may be used in conventional plants to produce polymers with a quality identical to that of the virgin polymers derived from classic monomers that come from crude oil or gas. This could be a major step towards closing the loop for plastic packaging as out of mixed contaminated plastics waste high quality polymers – also suitable for food contact – can be produced. Chemical recycling can thus play an important role in plastic waste management enabling achieving Circular Economy recycling objectives.

## RECYCLING IS THE PREFERRED OPTION FOR PLASTIC PACKAGING



Plastics recycling today works well for packaging which is easy to collect and sort, for example for plastic bottles and commercial packaging films

Recycling technology for plastics is still at an early stage since plastics is the youngest material. In order to realise its full potential, more innovation in plastics recycling technology is needed



### Young material, young technology

**Mechanical recycling** refers to operations that aim to recover plastics via mechanical processes (sorting, shredding, washing, drying and pelletising), thus, producing recyclates that can be converted into new plastic products

#### Mechanical



recycling

#### Chemical



recycling

**Chemical recycling** is a promising technology which would turn plastics back into their basic chemical building blocks. This would enable plastics to be reintroduced in the production process. As is the case already for other materials such as glass, paper and metal

Source: „The Unknown Life of Plastics“, PlasticsEurope

## Plastics – necessary in a climate-neutral Europe

The European Green Deal strategy announced at the end of 2019 very ambitiously presents the future development and transformation of Europe by 2050 into the first climate-neutral continent, taking into account sustainable development and fair transformation with an overriding importance of environmental protection in Europe.

This broad and comprehensive concept, which assumes a fundamental transformation of the European economy, is to improve the well-being of the Europeans and make Europe more competitive on a global scale. The planned and already implemented legislative proposals important from an industrial point of view include the European climate law (announced in March 2020), Carbon Border Tax (a type of environmental customs duty), extension of the emission trade system, or revision of the Energy Taxation Directive. They have also formulated the principal assumptions for smart and sustainable transport (a specific strategy is to be announced in mid-2021) and presented the frameworks of sustainable financing, for example within the Sustainable Europe Investment Plan, January 2020). For the plastics industry, there are two other important actions announced in the European Green Deal that relate to environmental protection: the New Circular Economy Action Plan and the action plan for “zero pollution” of air, water and soil (Zero Pollution Ambition). The New Circular Economy Action Plan contains many different and interconnected actions that will affect the plastics industry, including any possible production restrictions, eco-design requirements, improvement of plastic waste management, or compulsory content of recyclates in products. The document further announces restrictions concerning intentionally added microplastics, the need to close the circulation of raw materials and minimise the quantity of SVHC in products and environment, and the necessity to regularise the issues related to bioplastics (whether bio-derived or biodegradable).

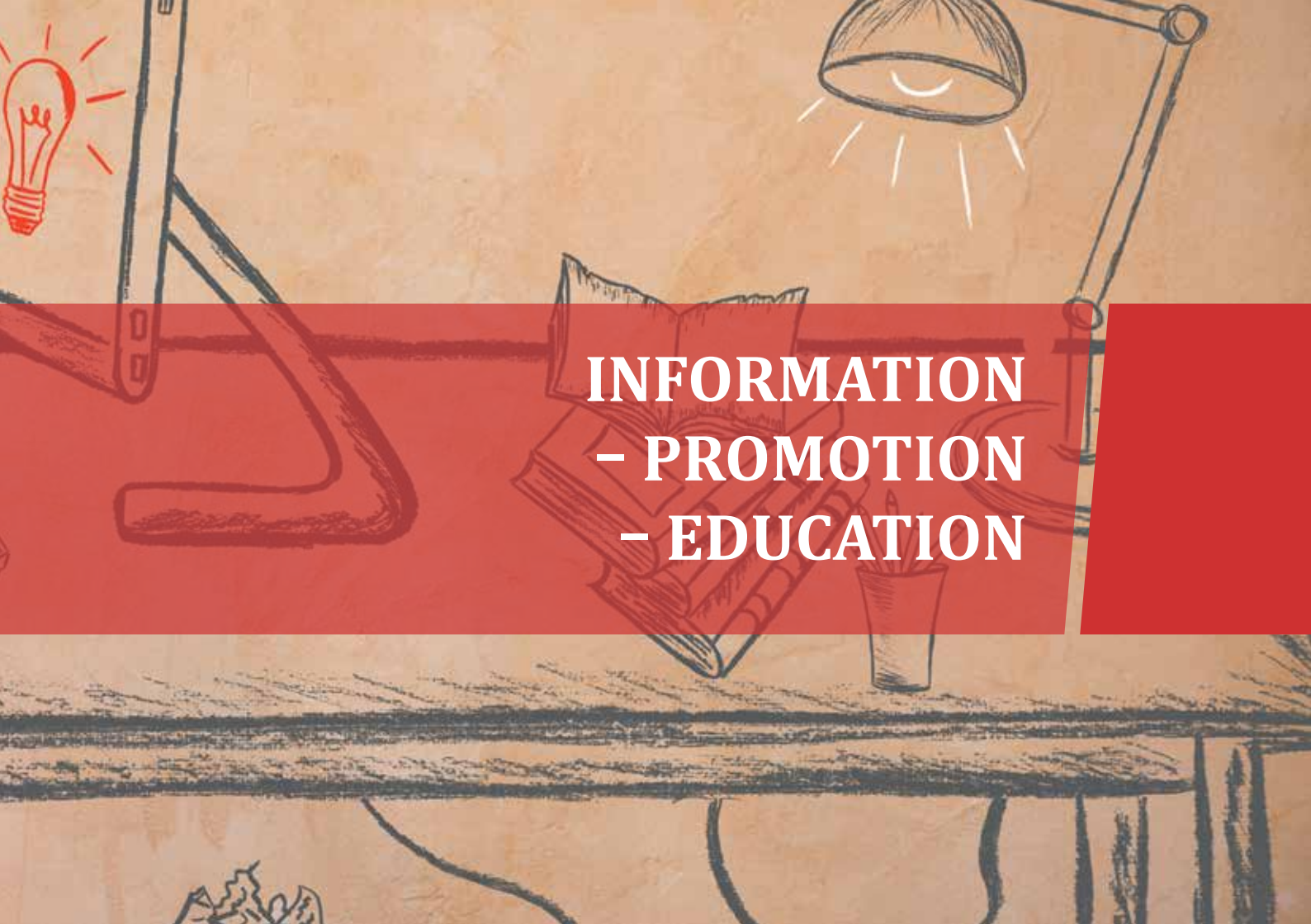
## Plastics in climate protection

Today in European Union buildings are responsible for roughly 40% of primary energy consumption and 36% of greenhouse gas emissions. Any reduction in energy demand entails a reduction in CO<sub>2</sub> emissions, which brings us closer to the ambitious goal to achieve climate neutrality by 2050. A broader use of plastics in buildings and construction may directly contribute to attaining that European objective. Building and construction products made of plastics are durable and easy to install, can be formed to obtain different shapes, are corrosion resistant, make for good electrical and heat insulation, and have a low weight and minimum maintenance requirements. With all those features, they considerably improve energy efficiency, whether in new buildings or in old facilities under renovation. PlasticsEurope Polska is engaged in promoting the positive role of plastics in construction and participates in assessing the legislation associated with these applications, together with the entire plastic insulation industry in Poland represented by the Polish Association of Styrofoam Producers (PSPS), the Styrofoam Producers Association, and the Association of Polyurethane Insulation Producers (SIPUR). Furthermore, in 2019 the Foundation organised in Poland a meeting of the European Modern Building Alliance, which promotes fire safety of plastic insulations, and was a partner at the conference organised by BASF company, titled “Skuteczna izolacja, bezpieczny dom, czyste powietrze” [Effective insulation, safe home, clean air], where the role of plastics in construction was discussed in the context of Circular Economy requirements.







A hand-drawn illustration on a textured, light brown background. In the top left, a glowing lightbulb with radiating lines is sketched in red. To its right, a desk lamp with a white shade and a black arm is drawn in black. In the center, a stack of three books is shown, with the top one open. A pencil holder with several pencils is sketched to the right of the books. The bottom of the image features dark, horizontal, textured strokes. A large, semi-transparent red rectangle is overlaid across the middle of the image, containing the text.

**INFORMATION  
- PROMOTION  
- EDUCATION**



*Knowledge of the important role of plastics in achieving sustainable development, energy conservation, climate and environmental protection, safety and health protection or the progress of civilization is promoted insufficiently. Objective and reliable information can rarely be found, whether in the media or in school books. Unfortunately, both the media and public awareness mostly transmit a negative image of plastics, based on emotions and false information. Providing reliable knowledge about the importance of plastics in the contemporary world and the role of those innovative materials in solving modern challenges is one of the principal tasks of PlasticsEurope Polska. It is implemented not only through day-to-day cooperation with the media, including regular preparation of press releases and relevant articles and statements in industry and nationwide media, but also via intensive educational activities through programs for primary and secondary schools, local and international educational projects, cooperation with universities or member companies, and through information actions and campaigns.*



Press conferences organised together with Targi Kielce [the Kielce Trade Fairs], where PlasticsEurope Polska presents the latest market data on the Polish and European plastics industry, have become a permanent part of the program of Plastpol Fair and attract extensive media interest. The 2019 press conference was accompanied by a debate titled “Plastics under pressure – how the industry can find its feet?”, which was attended by plastics producers, converters and recyclers as well as academia. The debate participants pointed out that the current discussion over plastic packaging is dominated by the issue of insufficient waste management, while we forget about all the benefits offered by such packaging both for consumers and the climate.





PlasticsEurope Polska also invites representatives of state administration, Polish members of the European Parliament, industry experts and the press to the European plastics industry events. For example, in 2019, it was the Plastics Information Day in Frankfurt, an annual press information meeting held in April, the IdentPlast 2019 conference devoted to plastic waste management, and the K Fair in Dusseldorf, the most important event for the global plastics industry. The communication activities are complemented by brochures and reports containing current market data and key issues concerning the role of plastics in the economy: PlasticsEurope’s report titled “Plastics – the Facts” and the Foundation’s Annual Report as well as the Polish versions of PlasticsEurope publications. The publications are distributed at various meetings and conferences and made available in electronic form at [www.plasticseurope.org](http://www.plasticseurope.org).

Meetings with the media are also held on the occasion of information actions and campaigns organised by PlasticsEurope Polska, such as the “Recykling Rejs – odzyskuj tworzywa sztuczne” [Recycling Rally – let’s recover plastics] or “Plastik nie do pieca – piec nie do plastiku” [Don’t Throw Plastic into the Stove]. The ninth edition of the “Recykling Rejs”, held in 2019 as a campaign involving the cleaning of rivers and lakes, was as each year supported and participated in by local communities and gaining a positive response in press, radio and TV. A film is available on YouTube titled “Recykling Rejs: 3 rzeki” [Recycling Rally: 3 Rivers], which documents one of those campaigns, promotes the project and discusses the issues relating to marine littering prevention.

The protection of air against the harmful effects of low emission and plastics waste incineration in households is a topic of the information campaign titled “Plastik nie do pieca – piec nie do plastiku”, which the Foundation has held for several years. In selected regions of Poland, animated spots illustrating the campaign messages were displayed in municipal transportation and additional press materials were distributed to local and nationwide media, informing of the ways to properly manage plastics waste and on the harmful effects of incinerating plastics waste in household furnaces.





**Śmieci** skrzydeł  
nie mają



**Zabierz je ze sobą na dół, posegreguj  
i wrzuć do odpowiednich pojemników na odpady.**



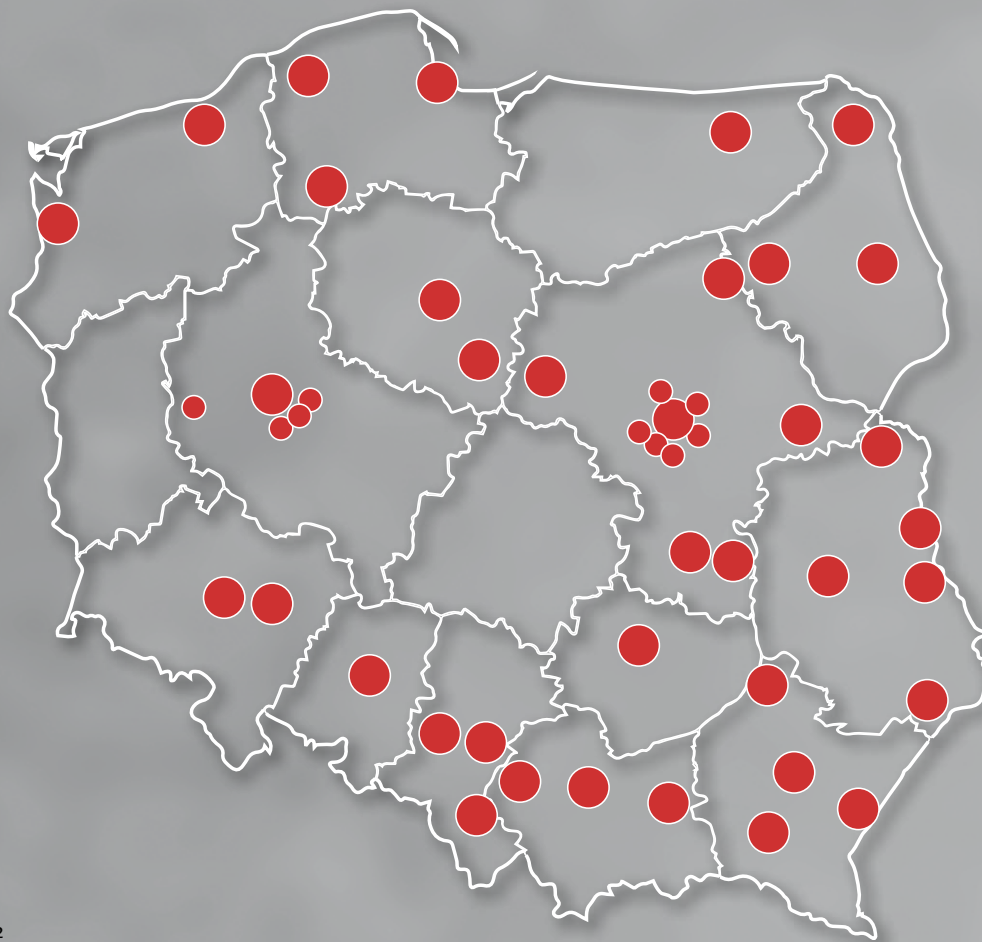
[facebook.com/recyklinggorom/](https://facebook.com/recyklinggorom/)



PlasticsEurope Polska conducts many educational projects and informational campaigns fostering a pro-ecological approach and appropriate waste management in collaboration with external partners. For several years, workshops for children titled “Opakowanie – nie śmieć! Od selektywnej zbiórki poprzez recycling do nowych wyrobów” [Packaging – Don’t Litter! From Selective Collection through Recycling to New Products], have been running in schools, public libraries and environmental education centres throughout Poland, where a mobile thematic poster exhibition is presented together with lectures and competitions on ecology, which encourage children not to litter and to segregate waste. An example of another joint education project is the “Recykling Górom”, aimed to teach the youngest tourists not to litter on mountain trails. PlasticsEurope Polska is also a partner in the “Koalicja 5 Frakcji” [5 Fractions Coalition], which aims to educate consumers on proper waste handling and to foster the sorting, recycling and recovery of waste by developing a consumer-friendly product labeling system that facilitates appropriate segregation of packaging waste.

The Foundation's flagship project is titled "Plastek i jego zaczarowane pudełko" [Plastek and his magic box], which is a Polish version of the European program for primary schools that introduces the issue of plastics and encourages pro-ecological approaches, which the Foundation has been running in Poland for ten years. The Foundation representatives, in cooperation with local centres for methodological consulting and teacher training, conduct workshops for schools where teachers of early school education and science receive free education packages that contain an experiment kit and a set of books for pupils as well as support materials for teachers. The materials let the youngest pupils to independently perform safe and easy experiments with the use of plastics, providing aid in implementing the science curriculum.





### Implementation of the “Plastek i jego zaczarowane pudełko” program in the years 2011–2019

- Warsaw and neighbouring districts, Płock, Ostrołęka, Siedlce, Radom, Zwoleń
- Toruń, Włocławek
- Poznań and the Wielkopolskie province
- Szczecin, Koszalin
- Gdańsk, Chojnice, Słupsk
- Giżycko
- Białystok, Łomża, Suwałki
- Lublin, Biała Podlaska, Chełm, Tomaszów Lubelski, Włodawa
- Kielce
- Wrocław, Środa Śląska
- Opole
- Katowice, Bielsko-Biała, Gliwice
- Kraków, Oświęcim, Tarnów
- Rzeszów, Krosno, Przemyśl, Tarnobrzeg



The “Plastek” program is regularly developing; last year a new experiment was introduced and tutorials for teachers were recorded, which show how to perform the experiments from the program. Additionally, the Foundation runs the website *eksperymentyplastka.pl*, devoted to the “Plastek” program and other educational projects. Since the beginning of 2011, the Foundation has distributed over 1,780 education kits and hosted 66 workshops for teachers from all over Poland. Since then, 20 editions of the Plastek art competition were held, where the main prize was awarded to 1,180 students.

“Tworzywa sztuczne – nowoczesne materiały” [Plastics – Modern Materials] is an educational project for older students that the Foundation has run for 6 years, which complements students’ knowledge on polymer materials. As part of the project, the Foundation provides schools with free experimental packages for testing the properties of plastics (plastic samples including an information brochure) and a set of books titled “Plastics – Modern Materials”. The program is promoted at different events and via education projects as well as during interactive webinars for teachers, which the Foundation organises twice each school year.



## European initiatives of PlasticsEurope: the EYDC Project

The “European Youth Debating Competition” (EYDC), held since 2016 by PlasticsEurope and the European Petrochemical Association (EPCA), is an international project for young people aged 16 to 19 that covers a series of student debates organised in European countries on the same terms and under the same topic. It aims to engage young people in a common discussion over the most important issues that impede contemporary society, promote and emphasise the role of education in science, environment and engineering.

In 2019 the fourth edition of that prestigious competition was organized, which was attended by over 400 students from Belgium and the Netherlands (Benelux), France, Spain, Germany, Poland, Italy and the United Kingdom. The Polish debate, held in Kraków in May, was attended by 80 secondary school students from around Poland. The jury representing technical universities, industry, non-governmental organisations and the media selected the three best speakers, who then represented our country at the final debate titled “Rethink, Reuse, Recycle: how would you shape a sustainable future with plastics and petrochemicals?” held in October in Berlin during the 53rd Anniversary Meeting of the EPCA.









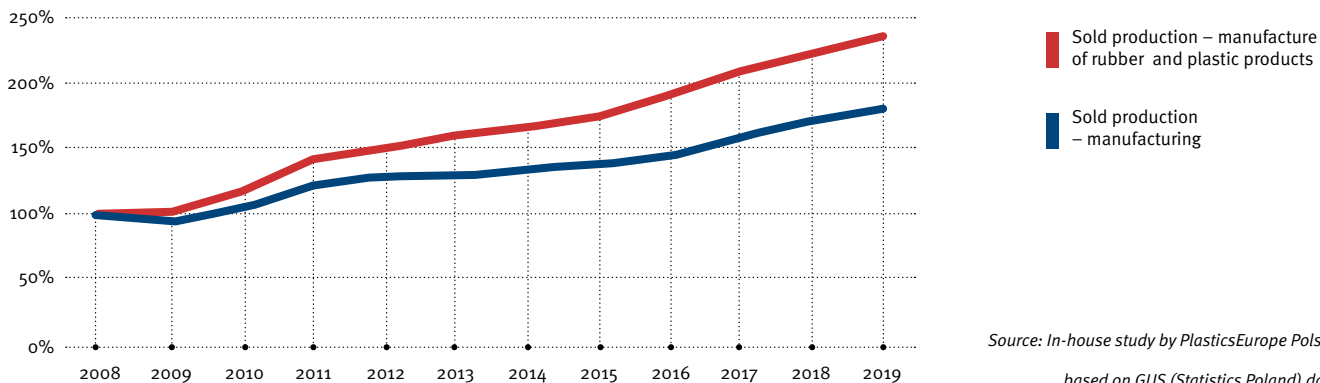
Product	Price	2014	Total 2015	2016
ICE	120	1200	1320	1440
BARK	100	850	750	850
CORN	85	300	900	700
PEANUT	150	2000	600	900
CHICKEN	100	600	2500	900
COCONUT	150	700	750	2800
MANGO	70	700	840	900
			770	-500

A hand holding a black pen is positioned over a laptop keyboard. The background features a data dashboard with various charts and graphs, including a pie chart, a donut chart, and a bar chart. The dashboard is overlaid on a blue semi-transparent banner that contains the title text. The overall scene suggests a professional or analytical context.

# PLASTICS - FACTS AND FIGURES

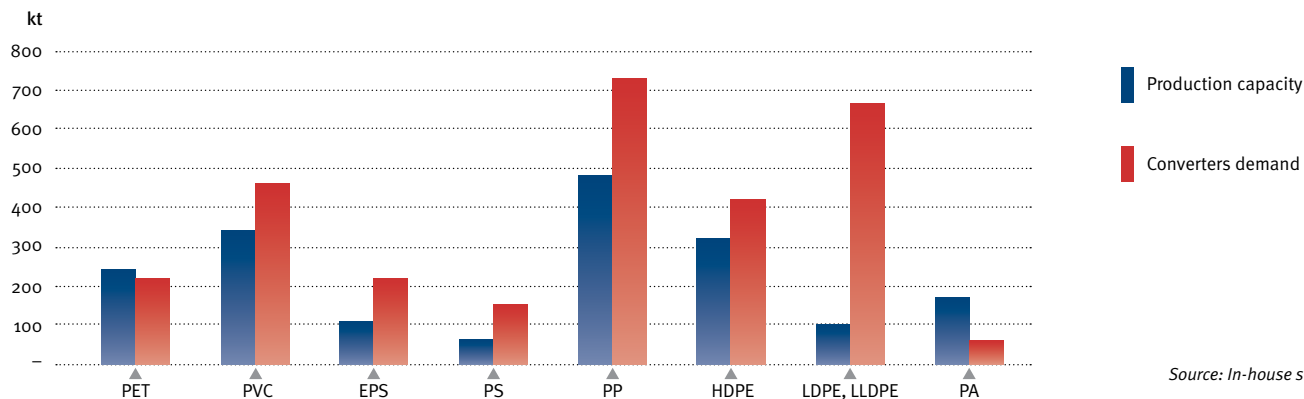
## Plastics industry in Poland

The Polish plastics industry has been developing dynamically for many years and now takes a leading position among other sectors of industry such as the food production, automotive, metalworks industry as well as the manufacture of electric and electronic appliances. The plastics industry comprises the producers of raw materials (including producers of polymers, additives and compounds), the plastics converters (who make semi-finished and finished products), processing machinery manufacturers, and recyclers. The value of sold production of rubber and plastic products sector in 2019 reached approx. PLN 100 billion, and the growth in 2008–2019 was 134%. This corresponds to 7.4% CAGR\*, being 2.4 percentage points higher than the respective value for the whole manufacturing sector.



Poland produces nearly all kinds of commodity polymers (excluding LLDPE), i.e. polyolefins (HDPE, LDPE, PP), polyvinyl chloride (PVC), polystyrene (PS, EPS) and polyethylene terephthalate (PET). Domestically produced engineering plastics are primarily polyamide (PA6), polyoxymethylene (POM), as well as polyester, epoxy and phenol resins, and polyurethane systems. Other engineering plastics such as ABS, polycarbonate (PC) or polybutylene terephthalate (PBT), are imported.

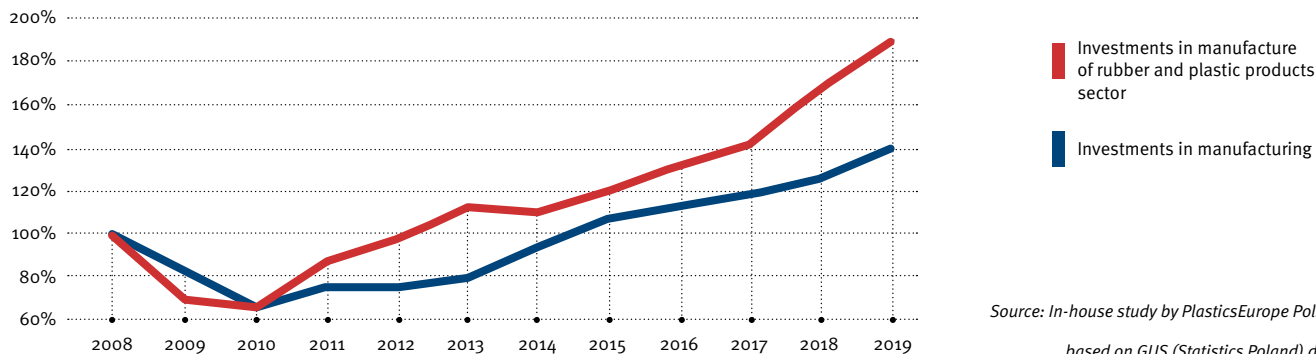
The largest Polish polyolefin producer, Basell Orlen Polyolefins, completed in 2019 the expansion of their Spheripol polypropylene unit, thus increasing their production capacity of that polymer by 20%. The Synthos Group is carrying out projects to extend its XPS production capacity in Oświęcim, while the Azoty Group has doubled its PA6 production capacity to 170,000 tonnes. The Azoty Group is also working on a large project in Police for the production of propylene (the PDH



Source: In-house study  
by PlasticsEurope Polska

technology: propane dehydrogenation) and polypropylene. This was the reason to set up the Azoty Polyolefins Group, which intends to launch by 2022 a propylene and polypropylene production plant with a capacity of 430,000 tonnes. The total capital expenditures in the manufacture of rubber and plastic products amounted in 2019 to nearly PLN 5.5 billion, being 12% higher than in 2018. Overall investments in the manufacture of rubber and plastic products in 2008–2019 grew by 88% (while the growth in the whole manufacturing sector was only 40%).

Analyses of PlasticsEurope Polska based on BISNODE financial reports show that the highest capital concentration among companies producing plastics in Poland is observed in packaging production and enterprises that make products for the construction and automotive industries. In 2019, manufacturers of rubber and plastic products in Poland employed around 211,000 persons (41% more than in 2008).



Source: In-house study by PlasticsEurope Polska

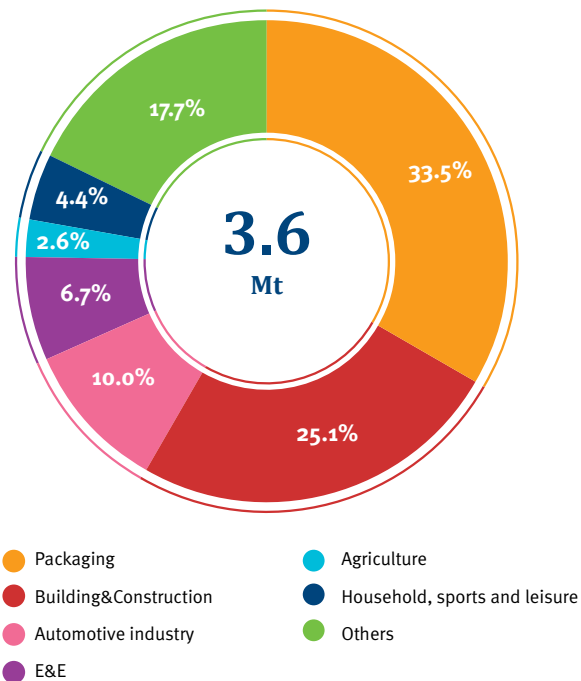
based on GUS (Statistics Poland) data



## Demand for plastics

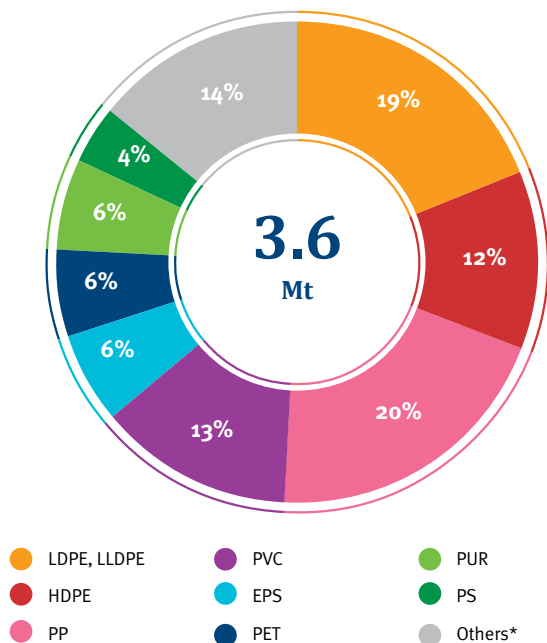
The converters demand for plastics in Poland was approx. 3.6 million tonnes in 2019, which represents an approx. 3% growth compared to 2018. With that figure of demand, Poland is sixth in Europe following Germany, Italy, France, Spain and the United Kingdom. Regarding areas of application, the largest quantities of plastics is used in packaging production (33.5%), construction (25.1%), automotive (10%), and the manufacture of electric and electronic appliances (6.7%). In Poland, the shares of each segment are similar to the European average, except for the packaging sector (higher share in Europe) and construction (lower share in Europe).

Plastics demand in Poland (2019)  
by application



Source: PlasticsEurope Market Research Group (PEMRG), Conversio Market&Strategy GmbH

## Plastics demand in Poland (2019) by polymer type



\*ABS/SAN, PMMA, PA, PCS, other thermoplastics, thermosets and others

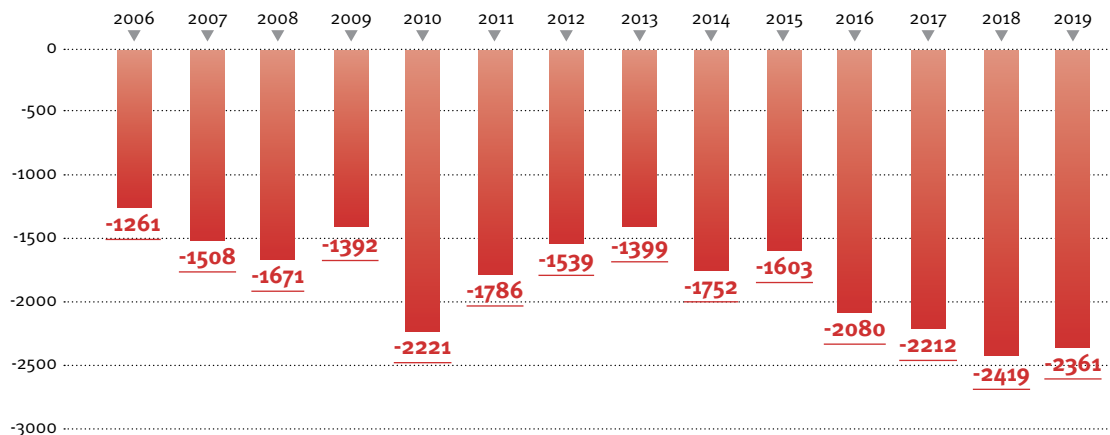
In a breakdown by polymer type, the highest share is represented by polyethylenes (LDPE, LLDPE, HDPE – around 30%), polypropylene (20%), polyvinyl chloride (13%), and polystyrenes (PS and EPS – an aggregate share of 10%). Lower shares are reached by polyurethanes and PET (6% each). Historically, in 2006–2019 the converters’ demand for plastics grew in Poland by 60%, which stands for 3.4% of the average annual growth. The fastest, sevenfold growth in that period was recorded in the automotive sector, while the packaging and construction sectors noted 90% and 48% growth, respectively. In the largest application segment (packaging industry), the demand is steadily growing: in the last 10 years, it grew by 55% from 772,000 tonnes in 2010 to approx. 1.2 million tonnes in 2019. If we compare the data from 2019 to that from 2010, we can observe that the shares of PP and PET have increased with a parallel drop of the share of polystyrenes (PS and EPS).

Source: PlasticsEurope Market Research Group (PEMRG), Conversio Market&Strategy GmbH

## Export - import

Given the high demand for plastics in Poland and the current production capacities of domestic producers, the converters need to make up their supplies with large amounts of polymers imported, and the negative balance of foreign trade increases year in year out, standing at - 2,361,000 tonnes in 2019. For many years, Germany has been Poland's main business partner in intra-Community trade, both in the export and import of plastics in primary forms as well as products. As far as non-EU countries are concerned, our greatest export markets for plastics in primary forms and products are Ukraine and Russia. Out of non-EU countries, we import most plastics in primary forms from South Korea and products from China.

### The Polish plastics industry trade balance



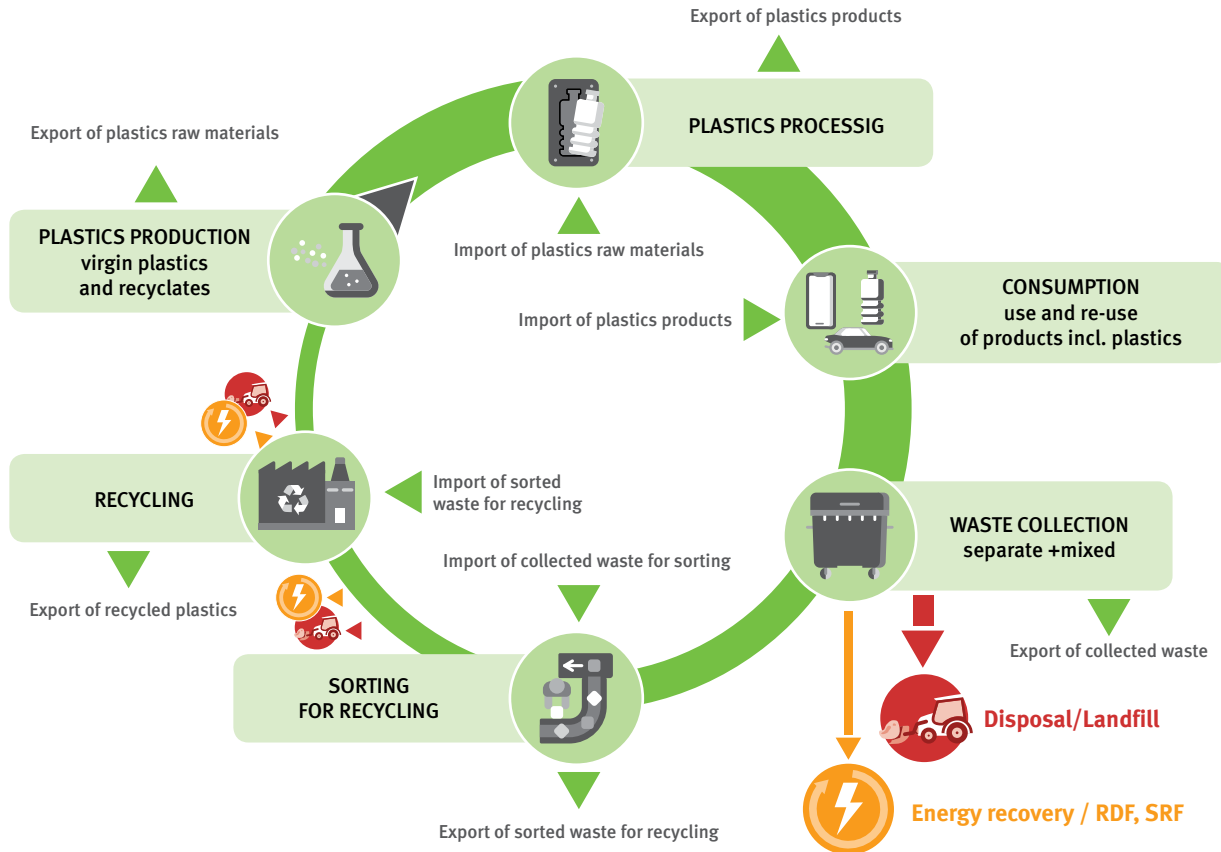
Including primary plastics and plastics products (kt)

Source: Eurostat,  
calculations by  
PlasticsEurope Polska

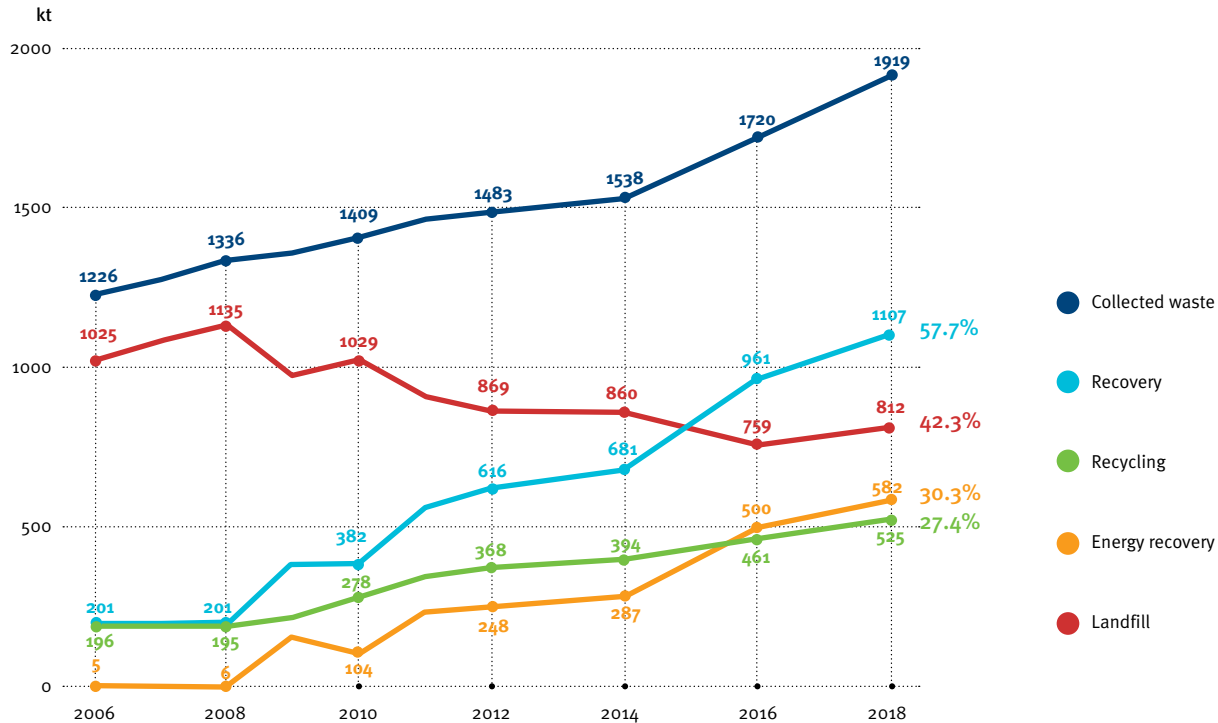
### Management of plastics waste

Regarding adaptation to Circular Economy requirements, experts emphasize the holistic approach in assessing the impact on the environment, and thus the need to consider the environmental impact of products throughout their life cycle. The most effective solution which can reduce that impact seems to be the extension of a product's life cycle, so as to design the products in such a way (eco-design) that, aside from easier recycling, they are most of all suitable for reuse (e.g. multi-use packaging), repair and renovation. Discussions on new business models, such as the Circular Economy, must be based on reliable data. PlasticsEurope in collaboration with such partners as the German expert company Conversio GmbH, has conducted for many years research and studies throughout Europe, preparing information on the collection and management of waste. According to the latest data from Conversio, around 1.9 million tonnes of plastics waste were collected in Poland in 2018, of which 525,000 tonnes (27.4%) were recycled, 582,000 tonnes (30.3%) were used for energy recovery (in incineration or co-incineration processes), and the remaining 812,000 tonnes (42.3%) were landfilled. Compared to the previous available figures (for 2016), in 2018 more waste was recovered (1,107,000 tonnes vs. 961,000 tonnes), but the recycling rate grew only slightly (27.4% vs. 27.0%).

## Circular Economy for plastics in Poland (2018)



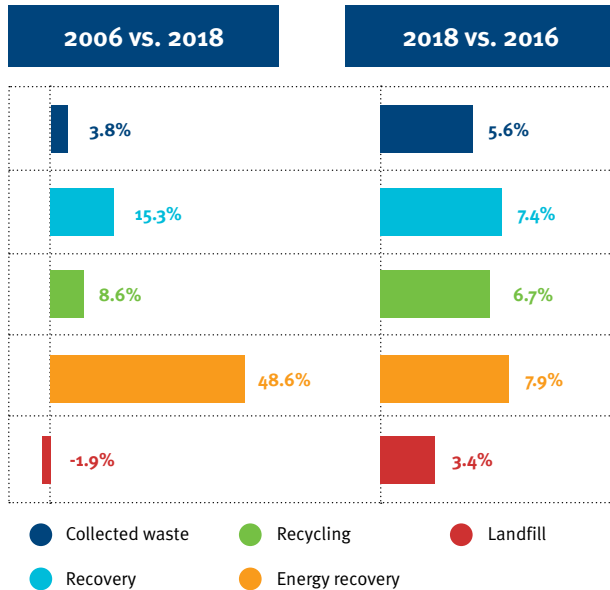
## Post-consumer plastics waste in Poland Waste management in 2006-2018



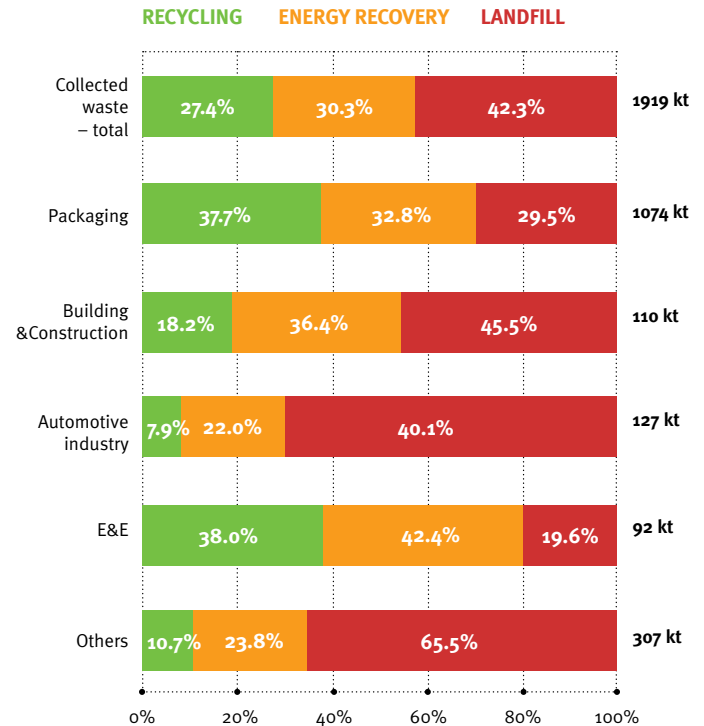
Source: Consultic / Conversio Market&Strategy GmbH

## Post-consumer plastics waste in Poland

### Compound Annual Growth Rate (CAGR)



### Plastics waste management by segment (2018)



Source: Consultic / Conversio Market&Strategy GmbH

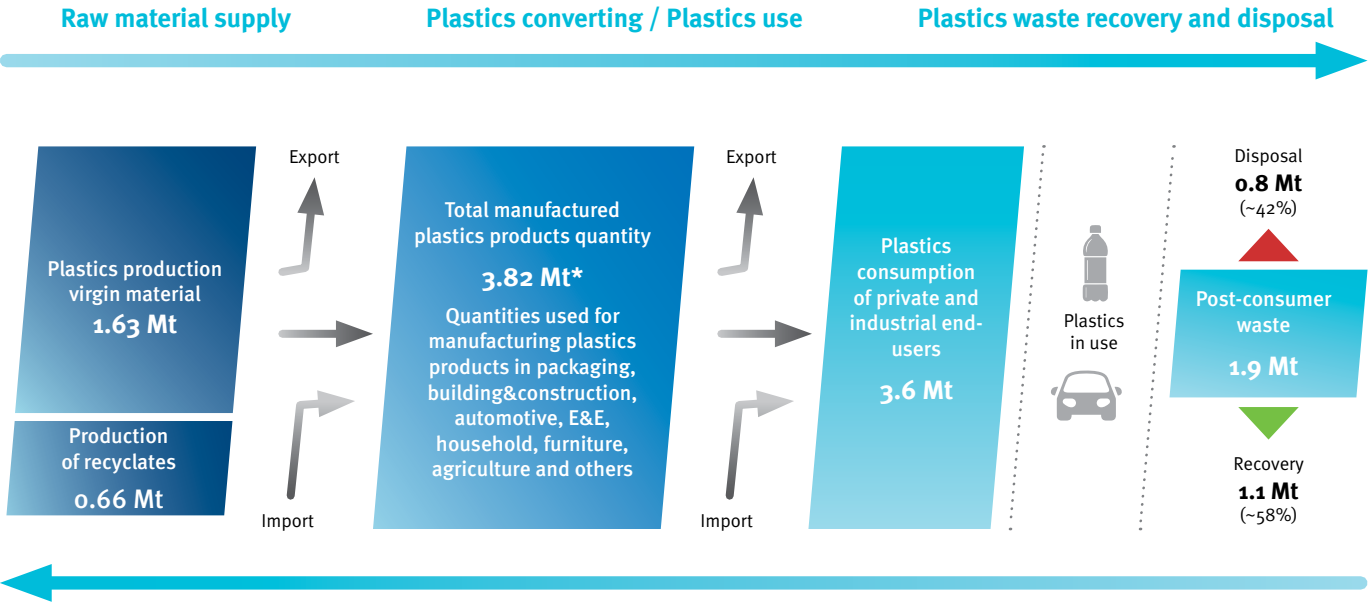
Compared to previous years, there was no change in distribution of various post-consumer plastics waste streams. Packaging waste still has the highest share, accounting for over half of generated waste (56%), while the shares of other streams (construction, automotive and household appliance waste) do not exceed 10% each. The highest recycling and recovery rates are reported for packaging waste (approx. 38% of recycling, approx. 33% of energy recovery) and for electric and electronic equipment (38% of recycling, 42% of energy recovery). For waste from the automotive sector, the recovery rates are considerably lower (8% of recycling, 22% of energy recovery), and 70% of that waste ends up in landfills.

Implementing one of the voluntary commitments stated in the Plastics 2030, the plastics industry ordered more comprehensive analyses of the entire life cycle of plastics, covering local production, import/export of those materials, and import/export of products containing plastics. That new analysis\* also covers the recovery of waste not only from post-consumer sources but also from the waste stream coming from plastics production and processing (pre-consumer waste), as well as the use of recyclates in various segments of the Polish economy.

\* The report titled “The Circular Economy for Plastics. A European Overview” is available at [www.plasticseurope.org](http://www.plasticseurope.org)



# Life cycle of plastics, Poland 2018



Source: Conversio Market&Strategy GmbH

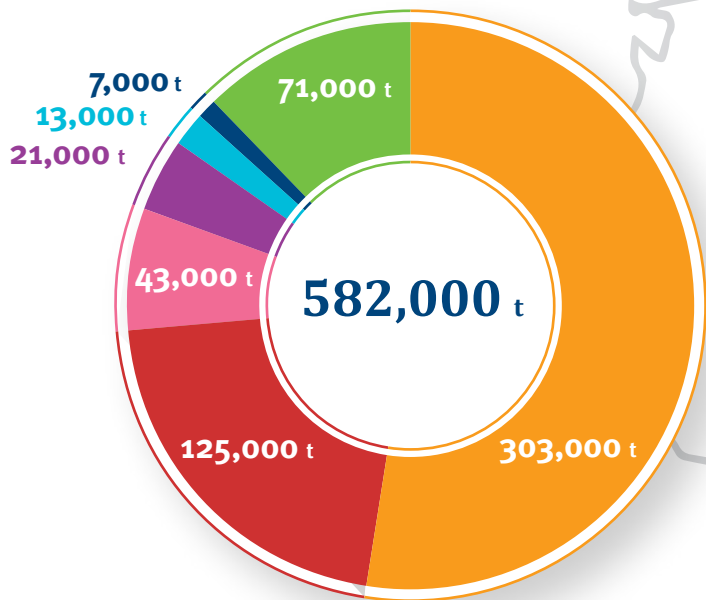
\* Thereof 3.25 Mt virgin material (3.49 Mt demand minus 0.24 Mt converting waste residues), 0.28 Mt recyclates from post-industrial waste and 0.30 Mt recyclates from post-consumer waste

Interesting conclusions can be drawn by analyzing how recyclates are used. The overall quantity of recyclates reused in 2018 (582,000 tonnes) includes “post-consumer” (302,000 tonnes) and “pre-consumer” recyclates (280,000 tonnes). In aggregate, recyclates represented around 15% of raw materials in 2018 used to make plastic products. They were mostly used in building and construction applications, - approx. 303,000 tonnes of recyclates (see the figure on page 52). The average content of recyclates (ratio of recyclates to virgin raw material) in end products for construction was 27.6% (see the figure on page 53). The plastic packaging industry, despite being the largest recipient of plastics, only used 125,000 tons of recycled plastics, and the average content of recyclates in the products was 10%. Such a low content of recyclates in packaging is due to many national and EU regulations, which restrict the use of recyclates in food-contact products and materials. Here, we should remember that the whole of Europe currently sends around 4 million tonnes of recyclates for production, and the European Union’s ambition is to return to actual circulation approx. 40% of plastic waste generated every year (around 10 million tonnes). Achieving that target will require a considerable effort at all stages of the value chain, from designing products (eco-design), through improving the collection, sorting and recycling processes, to adapting legislation and changing consumer behavior (littering reduction). A key element will be to co-finance the waste management, for example as part of the Extended Producer Responsibility (EPR): producers pay a fee on each marketed product to cover the costs of managing waste generated by that

product (see pages 15 and 16).

Even the best waste management systems do not allow for 100% recycling, so we need alternative methods of recovery. For plastics, the whole industry is intensively working on chemical recycling technologies, which can dramatically improve the rates of plastics recycling by covering such waste that is currently not mechanically recycled for reasons of economy or ecology (see page 21). However, before these technologies enter the market, the only reasonable solution is now to recover energy from such non-recyclable waste. By controlled incineration and the production of thermal and electrical energy, we recover full net calorific value of the waste, which enables us to reduce the consumption of other fuels that we would need to use for energy generation. Data on waste indicate that in 2018 as much as 42% of waste in Poland was not recovered. In our study, we show it as landfilled, even if according to official statistics such waste is not carried to landfills. Polish law, for several years, has banned the landfilling of calorific waste, but given the underdeveloped recycling capacity, insufficient demand for recyclates, and small capacity of energy recovery plants, the non-recycled plastic waste is actually stored at waste management plants, usually as a component of pre-processed waste fractions (subscreen fraction, RDF, pre-RDF, etc.).

## Use of recycled plastics in Poland by applications (2018)



### Content of plastic recyclates used in new products

- Building & Construction
- Packaging
- Agriculture
- Automotive
- E&E
- Household, sports and leisure
- Others

Source: Conversio Market & Strategy GmbH

## Content of plastic recyclates in products in various applications in Poland (2018)

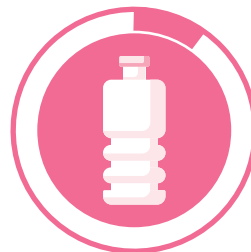
**Agriculture 34%**



**Building&Construction 28%**



**Packaging 10%**



**Automotive 6%**



**E&E 6%**



**Household, sports  
and leisure 5%**



**Others 11%**



Source: Conversio  
Market&Strategy GmbH

Above chart shows the importance of different sectors in terms of proportion of recyclates used in products.

Above data were rounded and refers to recyclates from post-consumer waste only.

PlasticsEurope Polska – a foundation representing manufacturers of plastics in Poland – associates 16 member organisations (2019) – national manufacturers of plastics, foreign corporations operating in Poland through local companies, as well as other companies of similar business profile operating in Poland:

ALBIS Polska Sp. z o.o.

ARKEMA Sp. z o.o.

Basell Orlen Polyolefins Sp. z o.o.

BASF Polska Sp. z o.o.

Borealis Polska Sp. z o.o.

Celanese Engineered Materials

Covestro MS Global AG - Oddział w Polsce

Dow Polska Sp. z o.o.

Evonik Resource Efficiency GmbH Sp. z o.o. Oddział w Polsce

Ineos Styrolution Poland Sp. z o.o.

SABIC Poland Sp. z o.o.

Synthos S.A.

Total Petrochemicals&Refining SA/NV (Spółka Akcyjna) Oddział w Polsce

Trinseo Europe GmbH Przedstawicielstwo w Polsce

Versalis International SA Oddział w Polsce

VYNOVA International nv

The authorities of the Foundation are the Management Board and the Foundation Council, consisting of representatives of the associated companies.

## FOUNDATION COUNCIL

**CHAIRMAN**  
Piotr Kwiecień  
(SABIC Poland Sp. z o.o.)

**VICE CHAIRMAN**  
Jerzy Marek Urbańczyk  
(Albis Polska Sp. z o.o.)

## MANAGEMENT BOARD

**PRESIDENT**  
Umberto Credali\*  
(Basell Orlen Polyolefins Sp. z o.o.)

**BOARD MEMBER**  
Marcin Bereza  
(Dow Polska Sp. z o.o.)

**BOARD MEMBER**  
Sławomir Górski  
(BASF Polska Sp. z o.o.)

**BOARD MEMBER**  
Piotr Tomalski  
(Borealis Polska Sp. z o.o.)

## EMPLOYEES OF THE FOUNDATION

**MANAGING DIRECTOR**  
Kazimierz Borkowski

**COMMUNICATIONS MANAGER**  
Anna Kozera-Szałkowska

**MANAGER CONSUMER PROTECTION  
AND ENVIRONMENTAL AFFAIRS**  
Grzegorz P. Rękawek

**EDUCATIONAL PROGRAMS**  
Edyta Wielgus-Barry

\* as of September 2020

**Fundacja PlasticsEurope Polska**

ul. Trębacka 4

00-074 Warszawa

Tel.: +48 (22) 630 99 01

e-mail: [info.pl@plasticseurope.org](mailto:info.pl@plasticseurope.org)

[www.plasticseurope.org](http://www.plasticseurope.org)

