ENVIRONMENTAL SUSTAINABILITY AT ALPLA

ABOUT ALPLA

ALPLA produces plastic packaging worldwide to meet your daily needs. We are one of the market leaders and a family-owned company.

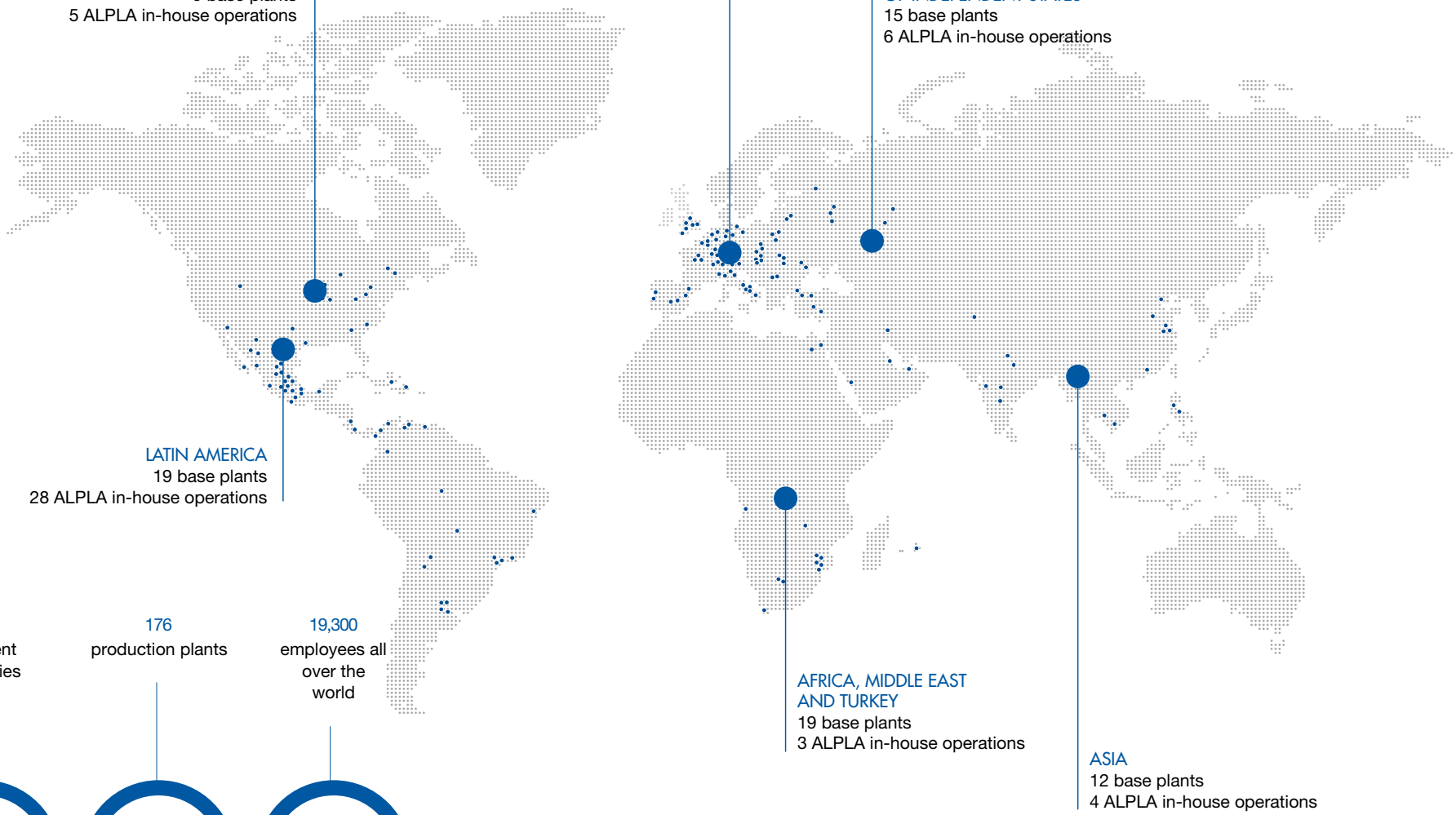
Around 19,300 employees at 176 locations across 45 countries produce high-quality plastic packaging for brands in the food, beverage, pharmaceutical, oil and lubricant, home, and beauty care industries.

Our highly qualified employees carry out research in a variety of fields. The latest technologies and close collaboration with our customers bring about innovative products in excellent quality.

Our values are clearly defined: As a family-owned company, we are well aware that our employees are our foundation and our most valuable asset. Fairness, respect and social responsibility towards them, as well as our partners, customers and the environment, characterise our thinking and way of working in all locations worldwide.

More information: www.alpla.com

GLOBAL PRESENCE

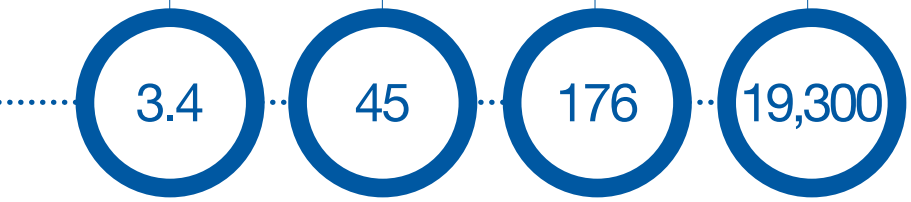


3.4
billion euros total sales 2017

45
different countries

176
production plants

19,300
employees all over the world



ENVIRONMENTAL AWARENESS AND EFFICIENCY - A STRONG COMBINATION AT ALPLA:

ALPLA Sustainability integrates social, environmental, ethical and human rights concerns into the business operation and core strategy. This booklet exclusively focuses on the company's environmental sustainability approach.

An important obligation of ALPLA is to create innovative ways of allowing future generations to live and grow up in an intact environment.

To live up to this responsibility, ALPLA pursues a resource-conserving policy in all areas:

MATERIAL ENERGY WATER TRANSPORT

ENVIRONMENTAL SUSTAINABILITY AT ALPLA

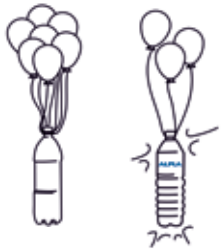
As one of the world´s leading companies in the plastic packaging industry, ALPLA is aware of its great responsibility in regards to the future of the world. To live up to this responsibility, ALPLA pursues a resource-conserving policy in all areas and incorporates sustainability into its core strategy.

Renewable energy is used wherever possible (photovoltaic, wind, water). Our production plants in Mexico, for example, are running on 65% wind energy. The global fresh water consumption of ALPLA could be reduced by 20% (base year 2011) due to the implementation of closed water cycle systems over the last years. Additionally, we report and collect data regarding our global energy and water consumption. The performance of ALPLA plants around the world is assessed, and individual action plans are developed by a team of experts to optimize a plant's environmental performance.

ALPLA believes in recycling even though economic conditions, depending on the fluctuating price of raw oil and the related price of new (virgin) PET, do not favor the recycling of plastics. Three recycling plants have been established in Austria, Poland, and Mexico. The recycled PET (rPET) produced in Austria has a carbon footprint of 0.45kg CO_2-equivalent per kilogram. That results in approximately 80% less greenhouse gas emissions compared to virgin PET (2.15kg CO_2-eq./kg).

ALPLA's in-house operations are optimizing our delivery systems, but also save secondary packaging materials and CO_2 emissions caused by transportation. Currently, 72 ALPLA in-house production plants are implemented around the world.

The development of new packaging materials is a big opportunity to effectively reduce negative environmental impacts. ALPLA is already working with bio-based plastics made of plants, such as sugar cane (PlantBottle™), and has been involved in the development process of Synvina's Polyethylene Furanoate (PEF), a plant-based material. In the future, PEF will be gained from food waste or other second generation feedstock gained from food waste.



Constant optimization, design adjustments and improvements in the production process allow to significantly reduce the weight of packaging products. The following example represents the huge success of light weighting at ALPLA.

Bottle size:	**500 ml**
Bottle in 2008:	21.0 g
Bottle in 2016:	11.0 g
Reduction by:	48 %

PROJECTS SUPPORTED BY ALPLA

As a family-owned company, financial support of social and environmental projects is part of ALPLA's philosophy. Some of the recently sponsored projects are:

THE OCEAN CLEANUP INITIATIVE

Reduction of marine litter.

THE PLANT-FOR-THE-PLANET INITIATIVE

Tree planting by children around the globe.

THE SOCIAL INNOVATION ACADEMY

Upcycling project in Uganda; houses and study rooms are built out of used plastic bottles.

HELIOZ

Water disinfection project in India; distribution of solar powered UV-measurement devices, which serve as an indicator for the process of solar water disinfection in transparent PET bottles.

ALPLA'S BEST PRACTICE PRODUCTS

ALPLA produces a variety of sustainable products for different customers. An overview of our best practice products is provided below.

WERNER & MERTZ

- Detergents and households
- 100% rPET (recycled PET) in all bottles
- Connected to other recycling initiatives ("yellow bag" in Germany)

VÖSLAUER

- Several types of mineral waters
- > 70% rPET in all water bottles

UHU STIC RENATURE

- Container from 58% plant-based raw material
- 46% decrease in CO_2 emissions
- 48% less consumption of fossil raw materials
- 100% recyclable

ECOVER

- 75% Plantplastic and 25% post-consumer recycled plastic
- 100% recyclable
- Reduction of CO_2 emissions and the use of fossil raw materials

HENKEL

- 60.000 laundry bottles with 15% rHDPE (recycled HDPE)
- Recycling HDPE is more difficult than recycling PET

P&G

- Head & Shoulders bottles with 25% recycled beach plastic
- Usage of 50% rHDPE

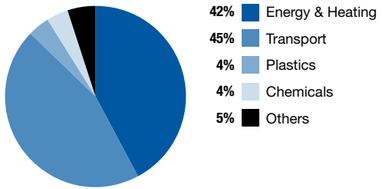
UNILEVER

- Foam bottles
- Material and weight reduction by 15% with equal functionalities and recyclability through foaming technology
- Project partner: MuCell®

MILK MARKET UK

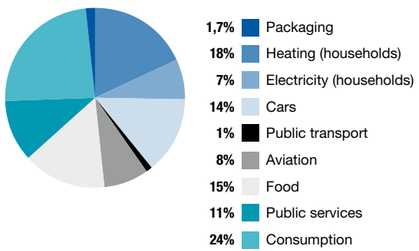
- Eco bottles
- Super lightweight HDPE bottles for Arla Foods & Müller Wiseman Dairies
- Bottles contain up to 30% recycling material

GLOBAL USAGE OF EXTRACTED CRUDE OIL



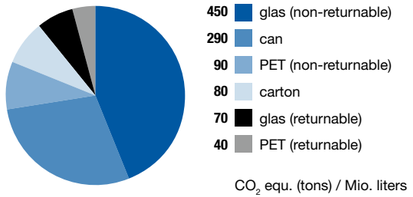
Plastic is generated out of crude oil. In fact, only 4% of the extracted oil worldwide is used to produce plastics. Only a small part of this 4% is used to manufacture plastic packaging material (1.5%), and even less oil is needed to produce plastic bottles [1].

AVERAGE EUROPEAN CONSUMER CARBON FOOTPRINT BY SEGMENTS (2011)



All packaging materials (domestic and commercial) only account for 1.7% of the total average consumer carbon footprint in Europe. Plastic packaging is related to 0.6% of the average consumer carbon footprint [2].

GREENHOUSE GAS EMISSIONS OF DIFFERENT BEVERAGE PACKAGING MATERIALS

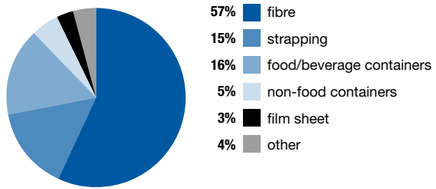


Returnable PET bottles have the lowest carbon footprint compared to other beverage packaging materials [3].

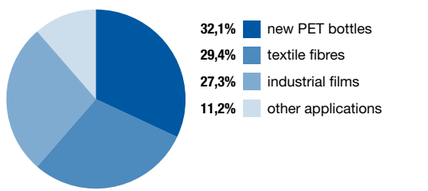
It is possible to reuse returnable PET bottles around 10-15 times before the quality is degrading. Then the bottles have to be recycled in order to keep the material in a circular economy.

Plastic is recyclable, which means that plastic products can be collected, reheated and reprocessed several times without remarkably losing material integrity. The biggest challenge today is that materials coming out of one application field (e.g. bottles) can be re-used in the same field. Very often, plastic products find new application fields (e.g. textile fibres) after being recycled without going through the additional processing steps required to re-enter in the product's original stream (e.g. bottles).

APPLICATION FIELDS OF RECYCLED PET, 2005 [4]



APPLICATION FIELDS OF RECYCLED PET IN GERMANY, 2015 [5]



Fraction	Net calorific value (MJ/kg)
Plastics	35
Textiles	19
Paper	16
Other materials	11
Organic material	4
Glass	0
Metals	0

[8]

If plastic packaging is not being recycled, the material can still be used for energy recovery instead of being disposed. Recycling is more favourable for the environment than thermal treatment but both options enable to prevent landfilling.

Plastic has a thermal value to countries where thermal treatment is used for energy generation. While plastic can be taken out of the stream, it would have to be substituted with alternative raw materials to ensure an adequate thermal value. To give an example, 15% of the plastic waste in the US was used for energy recovery through thermal recycling in 2014 [6]. (Germany had a thermal recycling rate of 53% of all plastic waste in 2015.) [7]

PLASTIC FACTS

Myth 1
PLASTIC PACKAGING IS NOT NEEDED

Plastic packaging protects our food and beverage products, making fresh meat, vegetables, fruits, and dairy products last up to 10 days longer [9]. One third of the globally produced food is lost or wasted each year. If only one fourth of the currently lost and wasted food would be saved, 870 million people could be saved from hunger [10]. Since global food waste accounts for 8% of total anthropogenic greenhouse gas emissions [11], the usage of plastic packaging is not only helping to reduce energy and water consumption needed for food production, but also tackles climate change by reducing food waste.

Myth 2
PLASTIC PACKAGING IS A WASTE OF NATURAL RESOURCES

Plastic is generated out of crude oil. After fractioning the raw material by the size of its molecules (treatment with high heat up to 400°C) gas, gasoline and petroleum are generated. For the production of plastics the raw gasoline (Naphta) is the most important fraction. Within a thermal cracking process the hydrocarbon compounds are rebuilt to arrive at materials with different characteristics (e.g. Ethylene, Propylene and Butylene). In fact, only 1.5% of the extracted oil worldwide is used to produce plastic packaging. While 90% is used for fuel (for energy, heating and transport). [12]

Myth 3
PLASTIC BOTTLES ARE LESS ENVIRONMENTALLY FRIENDLY THAN GLASS BOTTLES

The carbon footprint of PET bottles is lower than the one of some other packaging materials used for beverages. In fact, the carbon footprint of non-returnable glass bottles is 10 times higher than the one of returnable PET bottles. [13] This is caused by the high energy input required to manufacture glass: The melting of glass requires very high temperatures (>1000°C).

Constant optimization allows to significantly reduce the weight of packaging products. The weight of PET bottles could be reduced by almost 50% during the last decade.

For example 91% of packaging weight can be reduced by using 1.0 liter PET bottles instead of 0.7 liter glass bottles. Due to the light weight of plastics, up to 40% less fuel is used to transport drinks in plastic bottles compared to glass bottles. [14]

Myth 4
PLASTIC PACKAGING PRODUCES A LOT OF WASTE AND IS NOT BEING RECYCLED

Plastic is recyclable, meaning it can be reprocessed several times without remarkably losing material integrity. In countries with a well-functioning waste management system, a high percentage of plastic packaging is collected for recycling: PET collection rate 2016 of Germany: 91.8%, Switzerland: 85.2%, Austria: 73.2% [15]. PET collection rate 2015 of the US: 30.1% [16]. If the material is too contaminated for mechanical recycling, it is used for energy recovery through thermal recycling.

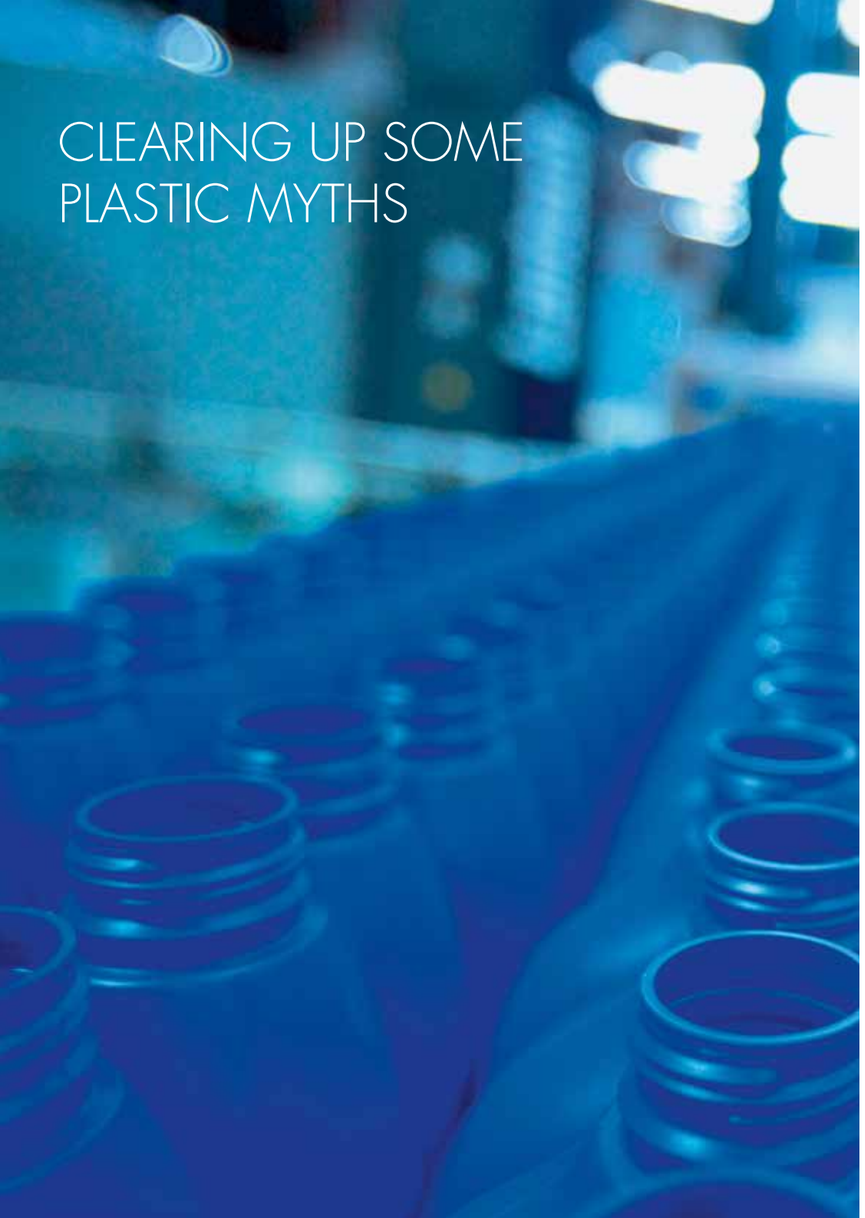
Myth 5
PLASTIC PACKAGING ALWAYS ENDS UP IN THE OCEANS

It is true that marine litter is one of the biggest environmental concerns of our time. 80% of marine litter originates on land due to poor or insufficient waste management and the lack of sufficient recycling and recovery systems, especially in developing countries. It is also unclear what effects micro plastics may have on the food chain and if they cause a potential risk to human health, while it is clear that they have a negative impact on the environment particularly the marine eco and wildlife system. [17]

Myth 6
PLASTIC PACKAGING IS HARMFUL

Plasticizers and Bisphenol A (BPA) have been identified as harmful for human health. These two substances are not used in PET bottles , PE personal and household care bottles or PP/PE closures. Within the packaging industry BPA derives from Polycarbonate, thermal paper or metal packaging (epoxy coatings); while plasticizers derive mainly from glass containers (PVC sealing). Therefore PET, PE or PP are not the real sources of these substances, but consumers are still unaware of this fact. Acetaldehyde is a natural substance which is created during metabolism processes in our bodies. It is a part of fruits and vegetables and appears in many food products that we consume every day. Acetaldehyde also appears in PET bottles but its concentration is far below the legally determined level and therefore not harmful for human health. [18]

Plastic does not dissolve in short periods of time even under the influence of heat and pressure. To the contrary, transparent PET bottles can help to treat polluted water through solar water disinfection.



CLEARING UP SOME PLASTIC MYTHS

SOURCES:

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[9] http://www.kunststoffverpackungen.de/show.php?ID=6126
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[15] Collection rates based on « RPET Study – 2016 West Europe », PCI Wood Mackenzie, 2017
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[18] http://www.bfr.bund.de/cm/349/selected-questions-and-answers-on-pet-bottles.pdf
[19] http://www.bpf.co.uk/sustainability/PET_Plastic_Bottles_Facts_Not_Myths.aspx
[12] https://www.ellenmacarthurfoundation.org/publications/new-plastics-economy-catalysing-action

Further information regarding ALPLA's sustainability performance
can be found on our homepage and in our most recent sustainability report:
www.alpla.com

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