

SUSTAINABILITY

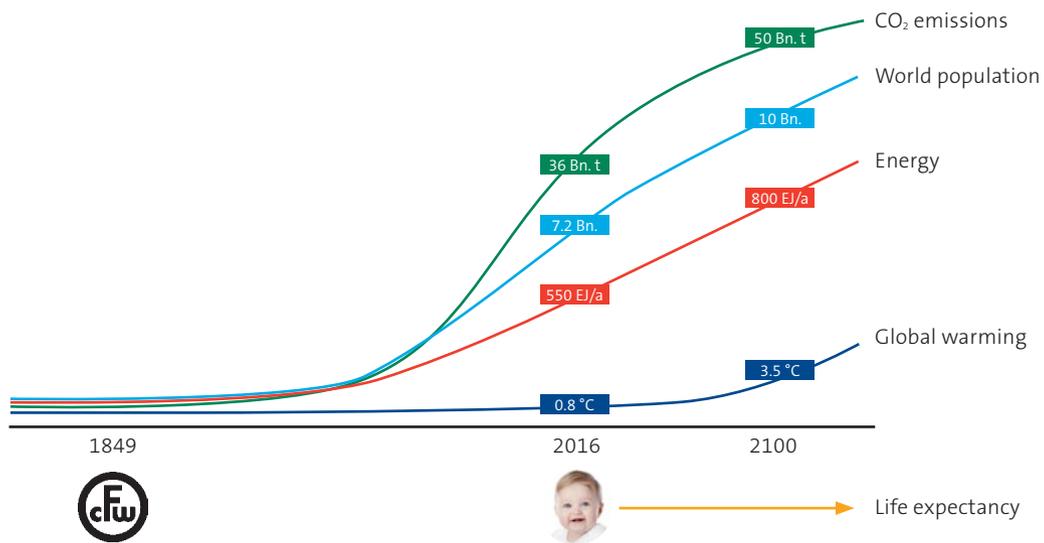


BEYOND TOMORROW

STEPPING UP TO A GLOBAL CHALLENGE

The world's population is growing – from 7.2 billion people today, global population is expected to reach around 10 billion in 2100. At the same time, global economic growth is enabling increased standards of living worldwide, which leads to better and longer lives. The demand for natural resources to feed, clothe, house and make people mobile is rapidly rising. At the rate we are using the world's natural resources today, current estimates suggest that we will need three entire earths to supply all our needs by the year 2050. Energy use continues to rise. Global demand for energy could easily double within the next 100 years.

Today, the main source of energy is still oil, which results in 36 billion tons of CO₂ that are emitted into the atmosphere every year. By 2035, that figure is expected to reach 45 billion tons, which will possibly lead to global warming. Under current conditions, the earth's average temperature will be 3.5 degrees Celsius higher in 2100 than it was in 1900. Weather-related natural catastrophes will become more frequent. The graphic shows what we can expect to happen if nothing changes. In contrast, we at Freudenberg are striving to build a more sustainable future – so that our planet has sufficient resources available for coming generations as well.



Sources: United Nations Population Division (2014), Carbon Dioxide Information Analysis Center (2014), Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report, 2013.



SUSTAINABILITY AS AN IMPORTANT PART OF RESPONSIBILITY

For Freudenberg as a values-based technology group in family ownership, we define total success as financial success plus fulfilling our responsibility for society. These two inseparable goals have been a central part of our corporate values for over 165 years.

Our Values and Principles have always embraced the Group's responsibility for society. Sustainability is one way by which we demonstrate this responsibility. Our Values

and Principles date back to 1887, the year in which Carl Johann Freudenberg first made his sons partners in the family business.

In 2014, we signed the Global Compact of the United Nations. This initiative seeks to encourage companies across the globe to conduct their business responsibly with regard to Compliance, Human Rights & Labor, Sustainability, Health & Safety, Environmental Protection and Corporate Citizenship. Each year we publish a report about our progress in these areas.



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- Freudenberg Values & Principles
- Areas addressing Responsibility issues/topics
- Operational processes and initiatives along the value chain (e.g. related to the UN Global Compact)
- Initiatives beyond the value chain

Our commitment to Compliance, Human Rights & Labor, Sustainability, Health, Safety & Environmental Protection as well as Corporate Citizenship is anchored in our Values and Principles, with particular emphasis on Responsibility. These five areas are closely linked to each other and are expressions of our responsibility for society.

OUR UNDERSTANDING OF SUSTAINABILITY

There are two dimensions to Sustainability at Freudenberg: The first is how we improve our processes and equip our plants to make production as resource efficient as possible. We call this minimizing our Footprint. The second dimension relates to the numerous products and services Freudenberg delivers customers to enable them to improve the efficiency of their own products. This is where Freudenberg contributes to a positive Handprint. Both Footprint and Handprint focus on resource efficiency to become more sustainable.

Freudenberg has introduced a Group-wide definition of Sustainability: We strive to minimize our Footprint and maximize the Handprint for our customers and end-users.

That means we are minimizing the environmental impact from the company's manufacturing processes (Footprint) and maximizing our impact as a Sustainability enabler at our customers (Handprint) by providing sustainable products and services.



Materials
Material efficiency
Recycled, renewable, and substitute materials
End-of-life handling of products

Emissions
Air pollution/emissions

Waste
Waste handling

Water
Water pollution
Water withdrawal

Energy
Energy efficiency
Renewable energy

Health
Impact of products on health

By minimizing our Footprint and maximizing the Handprint for our customers, we contribute to global Sustainability. Most important throughout the Group are the issue areas of materials, waste, energy, emissions, water and health.



INNOVATING TOGETHER FOR SUSTAINABILITY

MINIMIZING OUR FOOTPRINT – MAXIMIZING OUR HANDPRINT

The constant quest for increased Sustainability is a key driver for Innovation. At the same time, Innovation results in more sustainable processes and products. The one drives the other. Innovation can contribute to Sustainability by having a direct positive impact on our Footprint and Handprint.

Fundamentally, the more we innovate, the more sustainable our processes and products will become. The more

sustainable our products, the larger the Handprint will be for our customers and the end-users of Freudenberg products.

We are constantly innovating together with our customers and our research partners to develop the leading-edge technologies, products, solutions and services that we all need to ensure a sustainable future.



Save energy with high-tech lubricants

High-tech lubricants from Klüber Lubrication, a brand of Freudenberg, reduce friction between components and save energy compared with conventional oils. Energy costs can be cut by approximately five percent – a bonus for the environment and the company.

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New products from used PET bottles

The Freudenberg Performance Materials facility in Novedrate, Italy, processes several million PET bottles daily, turning them into plastic flakes. They are the base material for various Freudenberg products, particularly household products and nonwovens. Waste is recycled, natural resources are conserved and CO₂ emissions are reduced by 50 percent.



Use of recycled materials for sustainable household products

Up to 90 percent of the materials used in the manufacture of the latest generation of buckets and brooms from Freudenberg's Vileda brand are recycled synthetics. Innovative manufacturing technologies result in a 20 percent material reduction. In turn, this decreases the consumption of crude oil which used to be a raw material for most of the products. Furthermore, as no metal is used in their manufacture, the brooms themselves can also be recycled at end-of-life.



Reduce production waste

Many Freudenberg sites have launched initiatives to improve the eco-balance, for example by recycling waste and thus reducing waste volumes. One such project is called "Zero Landfill." At the location in Colmar, France, production waste was cut by 20 percent compared with the previous year. Another example is the introduction of cold runner injection molding to the Vibracoustic manufacturing network, which significantly helps reduce the amount of rubber waste.



Promote health by substitution of toxic substance

SurTec, a brand of Freudenberg, developed a health-friendly chromium (III) coating to protect against corrosion for use in the surface treatment of metal. This replaces toxic chromium (VI), which has a carcinogenic effect.

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Less friction for lower fuel consumption and CO₂ emissions

Freudenberg Sealing Technologies' Levitex, a gas lubricated mechanical seal for crankshafts, functions nearly friction-free. The primary ring interacts with a mating ring to form a cushion of air on which the primary ring independently floats. Air "lubrication" produces less friction than any oil and achieves an almost identical sealing performance. This results in lower fuel consumption, less wear and a long operating life. Translated into figures, Levitex saves 0.5 to 1 gram CO₂ per kilometer and vehicle.

Movie





Purify wastewater to drinking water

Viledon Water Solutions with Aquabio technology from Freudenberg Filtration Technologies are used in the food and beverage industry to treat water from the production process. The membranes used guarantee the reliable separation of solid particles and bacteria. Using reverse osmosis filtration and an additional disinfection stage, up to 70 percent of the wastewater can be purified to drinking water quality. These solutions help save energy and lower the cost of operating the filtration plant, thus reducing CO₂ emissions.



Seals for safer oil production

EagleBurgmann, a joint venture between Freudenberg and the Japanese Eagle Industry Group, delivers mechanical seals and seal supply systems for pumps and compressors in use at the most modern oil platform in the world off the Norwegian coast. EagleBurgmann has long-term experience in the oil industry and benefits its customers with valuable technological know-how.



Patients and medical staff benefit from Innovation

Freudenberg Medical's coated balloon catheters release drugs into the body exactly where they are needed. The special compounds and innovative coating process have a better and longer-lasting effect – with just a third of the drugs normally required. This reduces the side effects for patients, decreases toxic waste at the medical center and reduces costs.



Reduce CO₂ emissions in production

By implementing new efficient power units into existing production machinery, our Business Group Vibracoustic could significantly reduce the energy consumption at its facility in Cerkezköy, Turkey. This not only helps saving energy costs but also reduces the machineries CO₂ emissions by almost 700 tons every year – a reduction of more than 35 percent compared to the previous year.



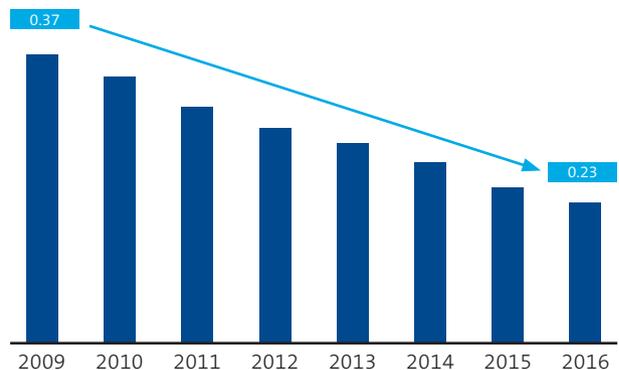
GETTING BETTER – STAYING FOCUSED

The Freudenberg Group is broadly diversified. Depending on their respective product portfolios and the production technologies they employ, our Business Groups necessarily have different areas with regard to Sustainability. In the six issue areas of materials, waste, energy, emissions, water and health, there are many excellent examples within the Freudenberg Group of minimizing the Footprint and maximizing the Handprint.

In an internal process, we have evaluated where we currently see the highest potential for improvement and where the impact of our Footprint and Handprint is greatest. Certain issues have been identified that are

of major importance to the Group as a whole: material efficiency, energy efficiency and CO₂ emissions. For greater transparency, we are measuring our performance in these three top areas across the Group to ensure that we continuously improve.

One example is energy efficiency. We are evaluating our energy consumption Group-wide. With various measures and the implementation of Energy Management Systems, we have continuously increased our energy efficiency. Energy consumed per Euro of sales has fallen by more than a third in just seven years: from 0.37 to 0.23 kWh. And we want to further improve our energy efficiency.



Energy efficiency at Freudenberg (kWh per sales in €)

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