

Eco-Design & Eco-Packaging

GRI Standards:

302-5: Energy
305-5: Emissions
306-2: Effluent and waste

EXECUTIVE SUMMARY

The eco-design concept is an approach that aims to improve the environmental performance of a product or service at the design stages throughout its whole life cycle. It is based on a holistic approach which considers:

- all steps of the life cycle (Raw materials, Manufacturing, Packaging, Distribution, Use, End of life);
- multi-criteria indicators (Climate change, Ecosystems, Resources, Water, Human health); and
- reduction of the environmental impacts in a global perspective.

Sanofi believes that implementing projects to promote eco-design principles can foster innovation, reduce costs, and decrease the environmental impact of its activities while developing the social dimension of its projects.

Sanofi has organized initiatives to reduce their environmental impact, including packaging materials optimization and simplification, considering current regulatory constraints. Packaging is crucial to ensure the quality and integrity of our products throughout the distribution chain. It also contains important information for the proper use of medicines, precautions and regulatory information. Packaging complies with each country's specific regulations for the collection and recycling of packaging materials, marking and identification systems, and acceptable concentration levels of certain heavy metals, etc.

Sanofi has organized initiatives to reduce their environmental impact, considering current regulatory constraints. Such initiatives are part of Sanofi's "Packaging Excellence" function within Global Industrial Affairs and include programs to reduce packaging size and weight, to set limits on packaging-related waste, and to develop ways to reduce the environmental impact of packaging used for transport, especially for temperature-sensitive medicines. Optimization and simplification of packaging patterns and transportation efficiency are part of a continuous improvement approach.

Fully integrated in our "Planet Mobilization" roadmap and one of our Corporate Social Responsibility flagships, eco-design principles span all aspects of our environmental strategy. It also contributes to the Circular Economy principles of the European Union and the Sustainable Development Goals 12 of the United Nations.

Many projects are already implemented with this mindset such as improving our supply chain sustainability, fostering a responsible consumption of raw materials, energy, or water for manufacturing activities, and promoting responsible use of medicines by patients.

Sanofi's environmental sustainability program, "Planet Mobilization", includes the commitment to improve the environmental profile of its products through an eco-innovative approach including eco-packaging and circular economy solutions. In 2020, as part of its renewed commitment to society, Sanofi launched a new generation of environmental sustainability goals, including "Eco-packaging approach for 100% new products by 2025" and "100% blister free vaccines by 2027". Sanofi is developing an eco-design digital tool to support the assessment and integration of environmental aspects into product design that follows a life cycle assessment approach. Until the tool which will cover the entire value chain of products is available, a tool dedicated to eco-packaging was launched in 2021. To ensure that the eco-packaging approach is implemented, we set up a Community of Practice in early 2022.

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1. Background and organization

Sanofi believes that implementing projects to promote eco-design principles can foster innovation, reduce costs, and decrease the environmental impact of its activities.

This is a great challenge for the pharmaceutical sector since medicines and vaccines are not ordinary goods; they must meet many different regulatory requirements to guarantee the quality of each unit sold. Marketing authorization for medicines and vaccines requires the approval of the health authorities for manufacturing procedures with regards to quality, as well as strict safety standards for active ingredients, excipients, medical devices, and packaging materials.

The health authorities must also approve any significant change in the processes, substances or materials used to manufacture a drug or vaccine, including the environmental risk assessment. Sanofi integrates environmental aspects when developing and manufacturing medicines.

Eco-designing medicinal products also aims to address many developmental challenges related to environmental impact. However, Sanofi strongly believes that, as a healthcare company, it is our responsibility to ensure the best environmental profile of products for our patients and the planet.

Thanks to the many case-by-case initiatives implemented worldwide as part of our environmental strategy, Sanofi already complies with many of the eco-design principles such as:

- a sustainable supply chain;
- encouraging industrial and territorial ecology to optimize resources management in collaboration with several local economic partners;
- responsible consumption by promoting better use of our products including the proper disposal of our products after use by patients; and
- Reuse, Reduce & Recycle.

In addition, Sanofi is involved in many associations in our industry to develop solutions that respect the principles of eco-design & circular economy and to share practices with our stakeholders.

2. Action plan

2.1. DEFINING SANOFI'S ENVIRONMENTAL ROADMAP

In 2015, Sanofi set out to define a new and ambitious environmental strategy across its entire value chain by deploying the "Planet Mobilization" program.

The objective was to define a roadmap to better integrate the environmental management system into the Company's decision-making process, by considering eco-design as a major component of our environmental and economic approach.

This project has received the support of Sanofi's senior leadership and management and is organized around numerous workshops to bring together the expertise of many internal and external stakeholders. This initiative aims to make Sanofi a leader of environmental management within the pharmaceutical industry by 2025.



2.2. IMPLEMENTING A SUSTAINABLE SUPPLY CHAIN

As part of Sanofi's eco-design approach, our transportation strategy is to guarantee the continuous supply of drugs and vaccines to our patients without any disruption. To minimize its environmental footprint, Sanofi's Transportation Department has already engaged actions with the following approaches:

- choose sea instead of air freight for long-distance shipments;
- increase the level of occupancy for truck and sea containers;
- develop railway transportation; and
- consolidate flows and mutualize transport to reduce the number of trucks on the road.

Opportunities and examples of sustainable supply chain for raw materials and finished goods are presented in the Transporting Medicines and Vaccines factsheet in our [Document Center](#).

2.3. LIMITING THE ENVIRONMENTAL IMPACT OF OUR MEDICINES

To better understand the environmental impact of medicines, Sanofi conducts life cycle assessments on key products, develops tools and performance indicators. This approach allows us to be more efficient on action plans.

In 2021, four LCAs were conducted with preliminary results for Allegra, Fluzone, Praluent and Reflex. Action plans will be defined for all products.

It is crucial that these improvements take place at the earliest stages of designing manufacturing processes, as it is often difficult to change them later.

Since 2013, Sanofi has developed an internal standard to guide teams when choosing solvents based on the following principles:

- select the least toxic solvents;
- reduce the number and the quantities of solvents used; and
- encourage the use of recycled solvents whenever possible.

Opportunities and examples of eco-design in chemistry are presented in the A Responsible and Sustainable Chemistry factsheet in our [Document Center](#).

In addition, Sanofi strives to reduce the consumption of packaging materials for many of its products.

2.4. REDUCING OUR PACKAGING MATERIALS CONSUMPTION

Packaging is crucial to ensure the quality and integrity of these products throughout the distribution chain, and pharmaceutical companies use many types of packaging for the medicines and vaccines they sell. It also contains important information for the proper use of medicines, precautions, and regulatory information.

In each country, specific regulations govern packaging - for example, for the collection and recycling of packaging materials, marking and identification systems, and acceptable concentration levels of certain heavy metals in packaging. In Europe, Directive 94/62/EU is an example. Because packaging requires the use of raw materials, Sanofi has organized initiatives to reduce the environmental impact of packaging globally while considering current regulatory constraints.

Such eco-packaging initiatives include programs to reduce packaging size and weight, to shift to recycled or recyclable materials with a circular economy perspective, to develop ways to reduce the environmental impact through the whole value chain of Sanofi's products.

A comprehensive initiative to reduce the consumption of packaging materials was introduced in early 2013 for our solid form products packaged in blisters made of PVC/aluminum and aluminum/aluminum. This optimization project allows a reduction of packaging material up to 50% but also a reduction of the secondary packing size. Combined with a pallet pattern optimization, the number of pallets of finished goods avoided represents an additional significant benefit, amounting to a 5 to 40% reduction, depending

on the site's portfolio. It may be estimated at several thousands of pallets avoided per year. In 2016, the benefits represented a reduction of 25,000 pallets to be transported (approximately 350 truckloads) yearly for the sites participating to the initiative.

Since 2018, a special effort has been made with three of our main CMOs (Contract Manufacturing Organizations): the optimization of pallet patterns and transportation efficiency (truck loading optimization with pallets double stacking) delivered significant reduction of transportation environmental impact: a reduction of 370 pallets (on a total of 4,500) and 72 trucks avoided (on a total of 148) on a yearly basis.

This process has been digitalized through an internal tool called "Stackatool" that is used to engage all CMOs. This project is still ongoing.

Since 2020, Sanofi has been implementing an eco-packaging project which applies an eco-design to packaging. This approach starts by carrying out a life cycle assessment (LCA) to quantify the environmental profile of products, with a focus on the packaging across the entire value chain. This method is scientifically recognized and standardized and allows comparisons to be made. It is therefore possible to check whether the technical modification options on a package are beneficial for several environmental indicators.

In 2021, a digital tool dedicated to eco-packaging was deployed, which enables us to complete a LCA on existing packaging and compare it with potential improvements. A community of practice has also been created for the collaboration of all stakeholders, engineering, environment, innovation, procurement, etc.

To coordinate these initiatives, HSE global in collaboration with "Packaging Excellence", within Global Industrial Affairs, and the packaging sustainable procurement community set up an Eco-Packaging Community of Practice. A dedicated network using Business Unit and site-based resources at 65 sites worldwide and includes more than 110 people.

2.4.1. Medical devices

While optimization and simplification of packaging such as blisters and boxes are part of the continuous improvement approach, specific studies are being conducted on other packaging-related factors.

Sanofi conducted intensive LCA studies on medical application devices, such as diabetes pens. Thanks to these assessments, and by applying the eco-design approach, the new devices are in development to reduce the weight, assembly complexity, and the number of materials which in aggregate result in a significant reduction in the overall environmental impact.

Eco-design for new devices: TouStar Toujeo® as first-in-class reusable pen won the Eco-Design award at Pharmapack as well as the Good Design award 2022:



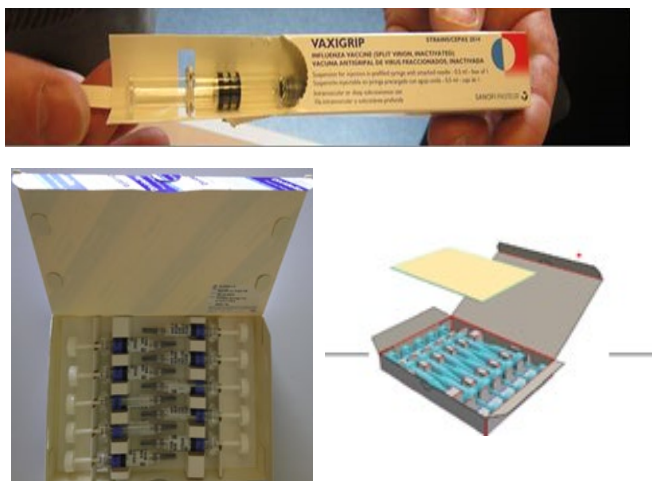
TouStar is the first reusable injection pen for a concentrated insulin, designed with a dedicated replaceable cartridge system.

2.4.2. Case study

Compact Box: A concrete example of Eco-Packaging

Commonly, secondary packaging for ampoules, vials and syringes has been composed of plastic blisters or trays contained in a carton box with a leaflet. Sanofi's ambition is to replace 100% of plastic blisters with

cardboard systems for vaccine packaging by 2027. As of 2021, 29% of Sanofi vaccines were sold without plastic blisters and efforts are underway to continue to limit plastic in secondary packaging of vaccines.



Thanks to the Compact Box Packaging initiated by Sanofi, we are delivering on our commitment to reduce plastic use in our packaging.

For this project, the current PVC blister has been replaced by a carton wedge, and the overall volume of the carton folding box has been reduced by more than 40%. The overall benefit represents:

- avoidance of 80 tons of PVC per year;
- 50% reduction in the number of pallets to be transported;
- significant carbon footprint reduction of vaccine distribution; and
- recycling facilitation, since it is a mono-material packaging which reduces waste sorting. Carton materials are recyclable in most countries.

The Compact Box project is a good example of the application of eco-packaging principles; this packaging innovation enables the reduction of environmental impacts and packaging costs for the entire distribution chain.

For more information, see our [Document Center](#): Waste Management Factsheet.

2.5. INDUSTRIAL AND TERRITORIAL ECOLOGY: SHARING RESOURCES WITH LOCAL COMMUNITIES

Sanofi promotes local economic development by encouraging the sharing of infrastructures that are necessary for the manufacture of vaccines and drugs, and by promoting projects to share materials with local economic players.

At Val De Reuil, Veolia received a green light in the beginning of 2020 to build a biomass combustion unit for the industrial platform. This plant will use wood-waste to produce decarbonized steam. This steam will be used by three different industrials.

At Aramon (Gard), after the phase-out of a fossil-fuel electrical power plant, a cluster, "Clean Tech Valley", has been created with EDF, Sanofi, ADEME. A wide four-MW photovoltaic solar plant has been signed.

2.6. ENCOURAGING THE RESPONSIBLE USE OF OUR MEDICINES

Many initiatives have been developed to raise awareness among citizens about the proper use of medicines as part of responsible consumption to ensure patient safety, to limit waste and to reduce emissions of pharmaceutical residues to the environment.

These actions are complemented by active support of take-back programs to ensure a proper disposal of unused medicines in many countries in Europe, Asia, North and South America.

For more information, see in our [Document Center](#): the Pharmaceuticals in the Environment factsheet.

2.7. REUSING AND RECOVERING RAW MATERIALS SUCH AS SOLVENTS AND WATER

A significant proportion of Sanofi industrial waste (41%) is recycled, representing close to 105,000 tons in 2021.

In each of our facilities, Sanofi also systematically collects and sorts many types of waste (excluding industrial waste) such as batteries, paper, plastic, ink cartridges, and catering waste, for recycling or recovery by local waste management services.

Opportunities of waste and wastewater recycling are presented in the Waste Management and the Water Stewardship factsheets.

For more information, see in our [Document Center](#):

- *Waste Management factsheet*
- *A Responsible and Sustainable Chemistry factsheet*
- *Carbon Footprint (Scopes 1, 2 & 3) factsheet*
- *Water Stewardship factsheet*
- *Pharmaceuticals in the Environment factsheet*
- *Transporting Medicines and Vaccines factsheet*