Eco-Design

GRI Standards:

302-5: Energy
305-5: Emissions
306-2: Waste

PLANET CARE

At Sanofi, the dedication to improving people's lives goes beyond innovations in healthcare. As a global organization, Sanofi also bears great responsibility in caring for the planet. Every day, Sanofi is minimizing the environmental impacts of its products and activities while strengthening its business resilience in the face of environmental changes.

Through the Planet Care program, Sanofi sets clear goals and is mobilizing employees, partners to join in taking action for the planet.

- ***Fight climate change**: build the road to carbon neutrality by 2030 and net zero emissions by 2045 by engaging Sanofi towards the 1.5°C global warming trajectory*
- ***Limit our environmental footprint and aim for circular solutions** by optimizing the use/reuse of resources and reducing impact of emissions*
- ***Improve environmental profile of products** by delivering eco-innovative products and by fostering a sustainable use of medicines*
- ***Mobilize our people for environmental sustainability** by promoting an environmentally conscious culture in the workplace*
- ***Engage our suppliers in our environmental ambitions by** sourcing responsibly and leading by example*

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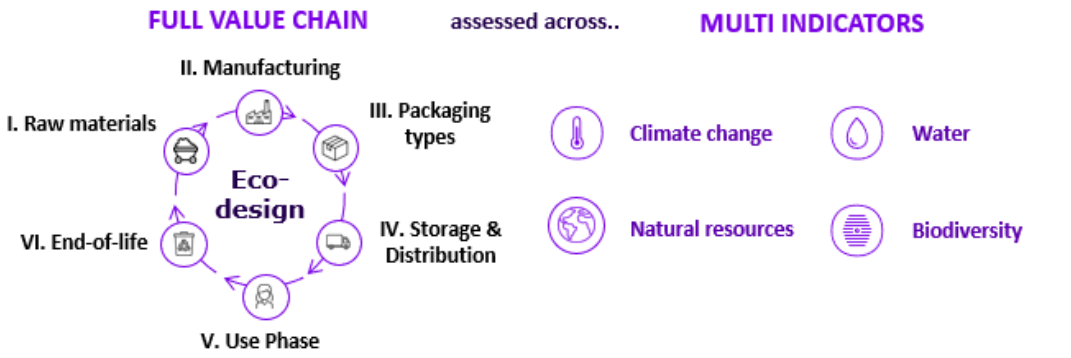
1. Our commitments to Eco-design

Eco-design is an approach that aims to improve our medicines' environmental performance by integrating environmental criteria into our product design and development. We have a holistic approach which considers:

- All steps of the life cycle (Raw material extraction & transformation, Manufacturing, Packaging, Distribution, Patient use phase, End of life treatment);
- Multi-criteria indicators (Climate change, water scarcity, resource depletion, … please see our full list below);
- To reduce the overall product environmental impacts.



This science-based expertise allows us to evaluate potential environmental impacts and take action to provide eco-innovative products.

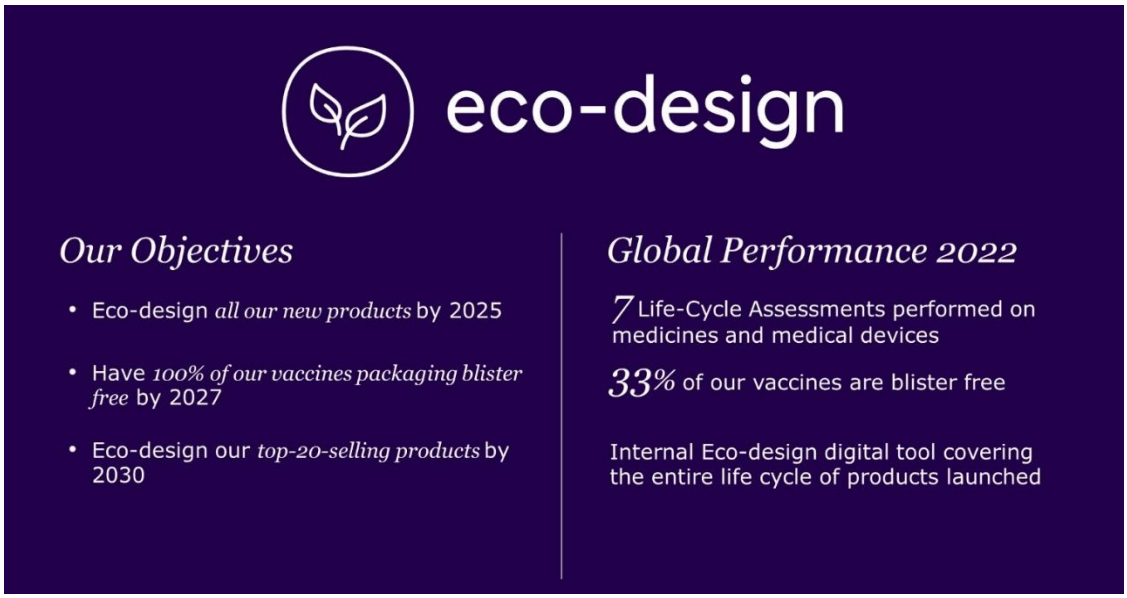
That is why Sanofi is committed to deliver the following:

- By 2025, 100% of our new products will be eco-designed
- By 2027, 100% of our syringe vaccines packaging will be blister-free
- By 2030, 100% of our top-20-selling products will be eco-designed

Fully integrated in our "Planet Care" roadmap, Eco-design is one of our Corporate Social Responsibility flagships.

Many projects are already implemented with this mindset, such as fostering a responsible consumption of raw materials, energy, or water for manufacturing activities, recycling solvents, including ecotoxicity concerns in our R&D pipeline, improving our supply chain sustainability, promoting responsible use & disposal of medicines by patients.

2. Performance



We measure the performance of our Eco-design activities using several indicators:

- # Life Cycle Assessments (LCAs) conducted yearly
- % New products undergoing eco-design approach

LCA is a standardized international method (ISO 14040 and 14044) for assessing the quantifiable effects on the environment of a service or product from the extraction of materials up to the end-of-life.

At Sanofi LCA Methodology relies on ISO 14040/44 standards and provides a common basis for consistent, robust and quality-assured life cycle data, methods and assessments. These support consistent and reliable business and policy instruments related to products, natural resources, and waste management and their future implementation, such as eco-labelling, carbon footprinting, reporting and environmental responsible procurement.

The environmental indicators considered for the LCA at Sanofi are from the EF 3.0 Methodology. It is a European method that is robust, commonly used and recommended by the Product Environmental Footprint. The European Commission has proposed the Product Environmental Footprint (PEF) as a common method for measuring environmental performance (Commission Recommendations 2013/179/EU). PEF is the life cycle assessment methodology recommended by the EU to quantify the environmental impacts of products (goods or services).

PEF has designed a list of 16 impact categories (below) which Sanofi is considering in its approach:

Impact category	Indicator
1. **Climate change**	Radiative forcing as Global Warming Potential (GWP100)
2. **Ozone depletion**	Ozone Depletion Potential (ODP)
3. **Human toxicity, cancer**	Comparative Toxic Unit for humans (CTUh)
4. **Human toxicity, non-cancer**	Comparative Toxic Unit for humans (CTUh)
5. **Particulate matter**	Impact on human health
6. **Ionizing radiation, human health**	Human exposure efficiency relative to U_{235}
7. **Photochemical ozone formation**	Tropospheric ozone concentration increase
8. **Acidification**	Accumulated Exceedance (AE)
9. **Eutrophication, terrestrial**	Accumulated Exceedance (AE)
10. **Eutrophication, freshwater**	Fraction of nutrients reaching freshwater end compartment (P)
11. **Eutrophication, marine**	Fraction of nutrients reaching marine end compartment (N)
12. **Ecotoxicity, freshwater**	Comparative Toxic Unit for ecosystems (CTUe)
13. **Land use**	Soil quality index (covering Biotic production, Erosion resistance, Mechanical filtration and Groundwater replenishment)
14. **Water use**	User deprivation potential (deprivation-weighted water consumption)
15. **Resource use, minerals and metals**	Abiotic resource depletion (ADP ultimate reserves)
16. **Resource use, fossils**	Abiotic resource depletion – fossil fuels (ADP-fossil)

Table 1– EU Product Environmental Footprint Environmental impact categories list

Key 2022 achievements:

To better understand and identify our medicines environmental hotspots, and efficiently act, based on science-based metrics, Sanofi conducted 7 environmental Life cycle assessments (LCA):

- **For our R&D products:** we performed the LCA of Amcenestrant. When Sanofi discontinued its clinical development program in August 2022, we continued to review the data and shared environmental results internally to leverage learnings for the rest of our R&D Pipeline.
- **For top-selling products:** we performed Environmental Life Cycle Assessment (LCA) of 6 products. We have started the implementation of action plans with the aim to reduce their environmental impact by 2030.

Furthermore, TouStar Toujeo® - our patient-centric, reusable, concentrated insulin pen - won the Eco-design award at PharmaPack 2022 & the Good Design award.

Regarding our packaging reduction, we had committed to get 100% of our syringe vaccines packaging to be blister-free by 2027: so far, we are on-track, with 33% of our syringe vaccines' packaging blister-free.

Accelerating the execution of LCA is key for us therefore we launched our internal EDDi (Eco-design Digital Intelligence) tool to model, measure & simulate, monitor & optimize our medicines' environment profile aligned with ISO 14040/44 and European Commission Product Environmental Footprint (PEF) standards.

An audit is currently run on EDDi tool by an independent Third Party and planned to be finalized by mid-2023.

3. Actions

Along our medicines' value chain, we are working to reduce their environmental impacts by:

- Reducing raw material extraction & transformation
- Minimizing environmental impact of our manufacturing production process
- Reducing our packaging/devices materials consumption
- Implementing a sustainable supply chain
- Promoting a sustainable use of medicines
- Reducing waste & boosting circularity

3.1. REDUCING RAW MATERIAL EXTRACTION & TRANSFORMATION

Based on the 7 products LCAs already performed, on very different forms (bio/pharmaceuticals, vaccines), we could empirically observe the following: the **cradle-to-gate stages** (Raw material extraction & transformation, Manufacturing) of the medicines are key environmental drivers. Resulting to the conclusion that integrating Eco-design in R&D at the earliest stages of designing manufacturing processes is essential.

Reducing the use of virgin resources is one of our key levers with Sustainable procurement. It translates firstly into an approach of reducing the consumption of resources and materials, and then into reducing the environmental impacts of the materials used, focusing on renewable, bio-based materials, secondary raw materials and in all cases materials from certified and traceable sources.

Sanofi recognizes that sustainable sourcing is essential to reducing its overall impact. The principles of sustainable sourcing help preserve natural resources, reduce the environmental footprint, and protect and promote biodiversity on sites.

For more information on our overall Sustainable Procurement Strategy, aligned with the UN Global Compact, see in our Document Center the Sustainable Procurement factsheet.

3.2. MINIMIZING ENVIRONMENTAL IMPACT OF OUR MANUFACTURING PROCESS

In addition to LCAs measuring the impact of our products, we complement with a qualitative approach composed with 2 elements that will reduce impact of the production process:

1. Our Eco-design concerned substances list is a toolkit reminding the following:
    a. Our Solvent Guide: 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;
        > encourage the re-use of solvents whenever possible.

    b. List of materials that are banned, avoided, restricted
2. Our CMC Handbook is reminding the Banned/Substitution/Recommended resources.

Opportunities and examples of eco-design in chemistry are presented in the "A Responsible and Sustainable Chemistry" factsheet in our Document Center.

3.3. REDUCING OUR PACKAGING AND DEVICES MATERIALS CONSUMPTION

Sanofi strives to reduce the consumption of packaging materials.

Since 2020, Sanofi has been applied an eco-design method 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 named "eQopack" was deployed internally, 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: this dedicated network uses Business Unit and site-based resources at 65 sites worldwide and includes more than 110 people.

3.3.1. Primary, Secondary & Tertiary packaging

Packaging is crucial to ensure the quality and integrity of our 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 sustainable initiatives include programs to reduce packaging size and weight, to shift to recycled or recyclable materials with a circular economy perceptive, to develop ways to reduce the environmental impact through the whole value chain of Sanofi's products.

On 2013-2016, successive packaging (pack I , II & III) projects involving our Solid form business enabled a reduction of 25,000 pallets (yearly) to be transported (approximately 350 truckloads) 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.

In 2021, Sanofi decided and put in place the needed actions to remove plastic for secondary packaging. This journey has started for some vaccines. In 2022, 33% of our syringe vaccines are blister-free. Reaching this target will mobilize significant investments, internal resources as well as end-user practice change management.

In 2022, Sanofi opened a major workstream to optimize the size of the Patient Information Leaflet, with no compromise on the content and readability but with the objective to reduce size and so paper consumption. In parallel, the processes and tools to develop Digitalized Patient information are being prepared so that Sanofi will be ready to further reduce or even remove the physical Patient information feature still making available all relevant information to the patient or health care professional for an optimal use of the products. In the Japanese market, the switch to ePI was completed in 2022.

Sanofi reinitiated a systematic analysis of its product packaging size, to bring further continuous improvement in the "Reduce" aspect of sustainability, with 2 major expected benefits : Reduction of packaging material overall weight and reduction of logistics impacts. The scope of this initiative, processes as a continuous improvement approach, is global and consists in addition numerous small changes which at the end will represent approx. 5% reduction of packaging material and logistic consumption.

PVC-out initiative started in 2022 with secondary packaging. Some primary packaging, mainly glass used for ampoules, vials, and syringes, are packed in plastic blisters or trays before being inserted in a carton

box with a leaflet. Replacing plastic trays with full carton trays for secondary packaging or replacing PVC/alu by full PET/PET blister for primary packaging are ongoing projects.

It should be noted that the deployment of the e-SASL (Simple Authentication and Security Layer) solution, a global e-solution against counterfeiting instead of the SASL label solution, makes it possible to reduce transport. Ambares (France) plant has started production with e-SASL, and Compiegne (France)and Scoppito (Italy)have equipped 2 lines (production in 2023).

3.3.2. 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, 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.

3.4. 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.*

3.5. PROMOTING A SUSTAINABLE USE OF MEDICINES

At Sanofi we promote the sustainable use of medicines and encourage the adoption, at country level of 2 measures:

- Firstly, prevention measures such as awareness around the disease prevention through vaccines and precision prescriptions to support the avoidance of waste.
- Secondly, awareness campaigns on the right way to use medicines (eg."Antibio Responsables" website in France : "Do not forget a simple waste-reduction measure: whenever possible, try to

obtain only the quantity of medicine you need. This will minimize the disposal of expired unused medicines later on.")

Opportunities and examples of sustainable use of medicines are presented in the Pharmaceuticals in the environment factsheet in our Document Center.

3.6. REDUCING WASTE & BOOSTING CIRCULARITY

This chapter is focusing on post-consumer waste, not operational waste. For the full scope of waste, please read the "waste & circularity" factsheet.

Pharmaceuticals are essential for human health, but they become an environmental concern when their residues enter the environment and leak into aquatic systems. Pharmaceuticals in the environment can occur when residues are excreted after consumption or when unused or expired medicines are discarded improperly. It is estimated that 8-10% of pharmaceutical substances in the environment originate from improperly disposed medicines (OECD 2019).

That is why Sanofi fosters the proper collection and disposal of unused or expired medicines, customized to local challenges. In countries, Sanofi participates in national schemes to finance the collection and treatment of waste. Going further, Sanofi is engaged in raising the awareness of citizens about the proper disposal routes or the existence of take-back schemes through communication campaigns to increase the adherence of customers to these programs.

For example, in Australia, Sanofi has partnered with "Return unwanted medicines" in a public private campaign raising awareness of consumers to return unwanted or out of date medicines to any pharmacy to be properly destroyed. 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.

The objective of Sanofi is to further pursue its actions in reducing pharmaceutical waste and to collectively support countries without limited collection schemes to set up proper use and disposal of medicine programs.

Opportunities and examples to reduce waste are presented in the Circular Economy & Waste Management and in the Pharmaceuticals in the Environment factsheets in our Document Center.