

# CIRCULAR ECONOMY

G4 indicators: G4-DMA, G4-EN23, G4-EN25, G4-EN27

## I. BACKGROUND

Sanofi believes that the implementation of projects to promote the principles of the circular economy can foster innovation, reduce costs and decrease the environmental impact of its activities while developing the social dimension of its projects. This is a great challenge for the pharmaceutical sector since medicines and vaccines are not goods like other 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 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. From the early stages of product manufacturing, Sanofi strives to select processes and substances that have less impact on the environment since any subsequent amendments to materials will be difficult to implement due to regulatory requirements.

Our ambitious environmental strategy, which has been deployed for years, can meet these challenges by aiming to minimize the negative impact of our activities on the environment. For example, Sanofi set targets to reduce its CO<sub>2</sub> emissions by 20% and its water consumption by 25% between 2010 and 2020.

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

- A sustainable supply chain
- Promoting eco-design
- Encouraging industrial and territorial ecology to optimize resource management in collaboration with several local economic partners
- Service economy: replacing the sale of goods by the sale of services
- Responsible consumption by promoting better use of our products including the proper disposal of our products after use by patients
- Extending the period of use through reuse and recovery processes
- Recycling

In addition, Sanofi is involved in many associations in our industry (LEEM, EFPIA, IFPMA, PhRMA, etc.) to develop solutions that

respect the principles of the circular economy and to share practices with our stakeholders.

Considering the nature of our biological products (medicines and vaccines) that degrade over time, with potential by-products, it is not possible to reuse or recover them for obvious health and regulatory reasons.

## II. ACTIONS

### 1. Defining Sanofi's environmental road map

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

The objective of this initiative was to define a roadmap in 2016 to better integrate the environmental management system into the company's decision-making process, especially by considering the circular economy as a major component of our environmental, economic and social approach.

This project has received the support of the company's senior 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. Implementing a sustainable supply chain

Sanofi strives to implement innovative solutions for sustainable procurement by developing the use of renewable energy and materials from sustainable industries as well as developing recycling and regeneration processes.

#### Encouraging the use of renewable energies

For example, in 2014, our site Ankleshwar site in India invested in a wind turbine covering 30% of the site's annual electricity needs, representing about 4,700 MWh (of a total annual consumption of 14,000 MWh).

In 2010, Sanofi entered into a partnership agreement with *EDF Énergies Nouvelles* for installing solar panels on four Sanofi sites in France (Ambarès, Aramon, Saint-Loubès and Sisteron). Installation began in 2011. Sanofi rents parking lots to *EDF Énergies Nouvelles*, where solar panels have been installed. The total area covers 22,000 m<sup>2</sup>, and the total annual electricity production is estimated at 3,650 MWh, representing the annual consumption of more than 6,000 inhabitants.

### Limiting the use of natural resources

The production of some medicines requires the use of natural substances (animal or plant) for active pharmaceutical ingredients, excipients, etc. Sanofi has already implemented processes to rationalize their use and to develop alternatives to preserve resources. For example, Sanofi sells an antimalarial medicine based on artemisinin which is extracted from a plant called wormwood (*Artemisia annua*), grown mainly in Africa and Asia. To preserve this resource, Sanofi has developed an innovative alternative method to produce artemisinin based on a biological synthesis process that no longer requires using the natural resource. Sanofi began the industrial production phase of this compound in 2011 and several tons have been produced every year since 2012.

## 3. Eco-design: Limiting the environmental impact of our medicines

In order to limit the environmental impact of new or existing production processes when possible (chemical synthesis, cleaning equipment, etc.), Sanofi conducts product life cycle analysis and develops tools and performance indicators.

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 on.

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 amount of solvents used
- Encourage the use of recycled solvents when possible

In addition, Sanofi strives to reduce the consumption of packaging materials for many of its products. Studies are performed in order to limit the size of packaging, which reduces the amount of cardboard, PVC and aluminum consumed. This helps increase the number of boxes transported per pallet and optimizes the occupation of the selected means of transport (trucks, barges, etc.).

## 4. Industrial and territorial ecology: Local economic development in collaboration with the community

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.

For example, our Aramon (France) industrial site produces opiate derivatives used in the treatment of pain. The active ingredient is extracted from plant resources. At the end of the extraction process, about 12,000 tons of plant residues are obtained per year. They are then made into compost, which is used locally by farmers.

In addition, since 2012, our Goa (India) site has been equipped with biomass boilers producing 100% renewable heat, which is then used to generate electricity used by the site. These boilers use organic waste produced by local farmers as raw material. This project generated more than 11,000 man-days of employment in rural India for farmers to collect and produce this biomass.

Toluene is a solvent provided by a local industrialist and used at the Mourenx (France) site for chemical synthesis processes. After use, toluene and its derivatives are sent back to the supplier for recycling. This process helps regenerate about 1,000 tons of toluene per year.

## 5. Service economy: Encouraging the use of shared services

Sanofi encourages the implementation of cost-saving shared services, such as carpooling. For example, on our Campus Val de Bièvre-Gentilly (France) site, where more than 3,000 employees work, Sanofi has developed a mobile application for employees to geo-locate drivers and passengers who are nearby.

## 6. Encouraging the responsible consumption of our medicines

Promoting the proper use of medicines as part of responsible consumption aims at informing healthcare professionals and patient associations about the rational use of our products.

Many initiatives have been developed to raise awareness among citizens about the proper use of medicines as part of responsible consumption in order to ensure patient safety and to limit waste and the environmental impact of our products. In 2014, more than 1,000 patients from Bretagne (France) took part in an educational program organized in close collaboration with local healthcare professionals.

In 2015, Sanofi developed a website for healthcare professionals and patients, dedicated to the responsible prescription and consumption of antibiotics: [www.antibioresponsable.fr](http://www.antibioresponsable.fr)

These actions are complemented by the company's proactive participation in unused medicines take-back programs to ensure safety during disposal processes and recovery.

For many years, Sanofi has supported unused medicines collection programs, which target patients and inform consumers about the safe disposal of unused drugs.

Sanofi has supported these programs in Belgium, Brazil, Colombia, France, Japan, Mexico, Portugal, Saudi Arabia, Spain, Taiwan, North America and Venezuela.

In France, Sanofi is the largest contributor to an unused medicines collection program called Cyclamed. Our financial

contribution to this program amounted to €1.8 million in 2015. We are also a major contributor to a DASTRI program for the collection and safe disposal of “sharps” (needle, lancets, infusion sets, etc.) after use by individuals, mainly people with diabetes.

## 7. Reuse and recovery: Extending the period of use

Sanofi strives to reuse and recover raw materials such as water and solvents as often as possible. More than 18% of industrial waste generated by Sanofi is incinerated with thermal recovery, representing 60,564 tons of waste in 2015.

Water is essential for the manufacture of drugs and vaccines. Since 2004, our Haverhill (United Kingdom) Genzyme site has implemented an innovative process to recycle about 75% of the water required for drugs manufacturing. This enables it to produce 11 tons of water per hour – and the water does not have to be extracted from natural systems.

Three Sanofi production sites in India (Ankleschwar, Goa and Shanta) are equipped with wastewater treatment plants using innovative technologies. As a result, up to 98% of treated wastewater can be reused in the cooling towers at these sites.

The Aramon (France) site washes acidic fumes from incinerators. This generates about 2 m<sup>3</sup> per hour of hydrochloric acid, which is then used to adjust the pH of wastewater at a treatment facility on site to neutralize liquid effluents.

## 8. Recycling

A significant proportion of Sanofi industrial waste (41.6%) is recycled, representing 137,415 tons in 2015.

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

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

- *Waste Management Factsheet*
- *Green Chemistry Factsheet*