Carbon Footprint – GHG Emissions (Scopes 1, 2 & 3)

GRI Standards:

402-1: Energy
305-1, 305-2, 305-3,305-4, 305-5: Emissions

EXECUTIVE SUMMARY

Sanofi has committed to limit the impacts linked to its activities on the environment. One of the major challenges of the Planet Mobilization program is reducing Sanofi's greenhouse gas (GHG) emissions:

- direct emissions related to Scopes 1 and 2 (industrial, R&D and tertiary sites, including the medical representative's fleet vehicles); and
- indirect emissions related to Scope 3, associated with the value chain activities (transportation and distribution, purchased goods and services, waste generation, etc.)

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1. Background

Since 2015, the Planet Mobilization roadmap sets ambitious targets that involves all the Company's resources in defining objectives and engaging with external partners.

This program is steered by a committee lead by the Executive Vice President of Industrial Affairs (a member of the Company's Executive Committee) and includes as core members: Sanofi's Head of Environment, Global Head of HSE, Head of Corporate Social Responsibility, Chief Procurement Officer, the Director of R&D France, and senior representatives of the Company's various Business Units.

Operational committees dedicated to each environmental theme (climate change, responsible water management, eco-design, biodiversity, waste management, pharmaceuticals in the environment) have been chartered to ensure the roadmap implementation and the achievement of Planet Mobilization ambitions.

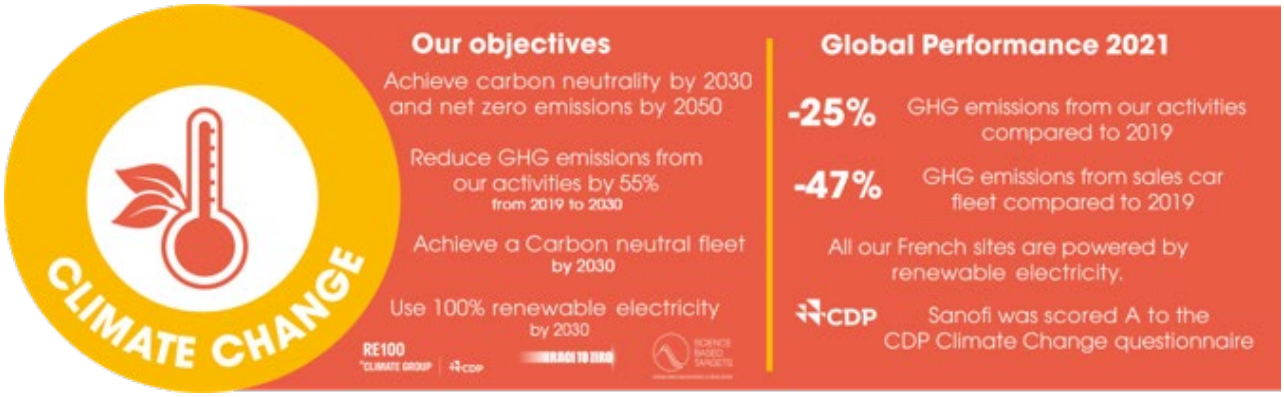
Planet Mobilization is built around the following five commitments:

- mitigating climate change: achieving carbon neutrality by 2030 and zero net greenhouse gas emissions by 2050 (all scopes), by committing Sanofi to the trajectory of limiting global warming to 1.5 °C;
- limit its environmental footprint and opportunities for circular solutions that optimize the use and reuse of resources and reduce the impact of its emissions;
- improve the environmental profile of products by developing eco-innovative products that reflect the Company's environmental ambitions and by promoting the sustainable use of medicines;
- mobilize employees around sustainable development by promoting an environmental culture in daily work and decisions; and
- engage its suppliers in their environmental approach by sourcing responsibly and setting an example.

2. Greenhouse gas emissions related to Scopes 1 & 2

2.1. DASHBOARD: OBJECTIVES AND PROGRESS

Based on 2019 figures, we have committed to **reduce our Scopes 1 & 2 carbon emissions by 55% by 2030** and **reach net-zero by 2050** (industrial, R&D and tertiary sites, including the medical rep fleet). At the end of 2021, Sanofi's footprint for Scopes 1 & 2 has decreased by 25% compared to 2019.



2.2. KEY FIGURES

2.2.1. Scopes 1 & 2 CO_2 emissions

Tonnes of CO_2e [a]	2021	2020	2019 (baseline)
Scope 1 - Direct emissions – Natural gas & fuels & refrigerants	424,709	447,975	449,596
Scope 1 - Direct Emissions (sales fleet fuels)	43,071	50,116	80,522
Scope 2 (electricity, steam purchased, etc.)	192,701	255,835	352,435
Total	**660,481**	**753,926**	**882,553**

(a) CO_2e = CO_2 equivalent

Significant improvements have been achieved with our sales fleet consumption due to an eco-driving policy and culture, improvement in fuel-efficiency of the fleet, and reduced travel. The second improvement is due to an acceleration of the procurement of renewable electricity supply and a commitment to RE100, an international recognition: Sanofi has committed to a target of 100% renewable in 2030.

2.2.2. Sanofi's energy consumption

Energy consumption (MWh)	2021	2020	2019 (baseline)
Natural Gas	2,059,052	2,100,357	2,092,377
Electricity	637,196	1,172,250	1,409,604
Renewable energies	953,545	440,332	191,134
Others (steam, fluids, chilled water, compressed air)	455,219	486,255	471,606
Total	**4,105,012**	**4,199,194**	**4,164,721**

Sanofi accelerates its purchase of renewable electricity wherever possible. In 2020, Sanofi sites in Italy, Hungary, Poland, Ireland, UK, Spain, use 100% renewable electricity.

2.3. HIGHLIGHTS

2.3.1. Improving energy efficiency and decarbonization at our sites

2.3.1.1. Be Carbon Neutral by Design

For new buildings, new sites, for all major projects, a Carbon Neutral Design is applied that ban the use of fossil energies (natural gas, fuel oil, etc.) to heat new buildings. The requirement is to heat buildings with energy recovery, heat pumps and renewable electricity.

2.3.1.2. 100% Renewable Electricity (RE100 commitment in 2030)

This program is co-lead with Procurement & HSE teams and promotes initiatives for:

- onsite PV solar generations on industrial, R&D, admin sites and orphan sites/lands;
- supply renewable electricity wherever possible through long-term contracts as Power Purchase Agreement (PPA) or renewable certificates (Guarantee Of Origins, RECs, I-RECs); and
- phase-down & convert or stop of Combined Heat and Power Plants (CHPs) or Cogeneration Plants that combust fossil energies.

2.3.1.3. Adapt our sites for climate change with natural fluids instead of fluorinated gases for our chillers

Following the Kigali's amendment in 2016, Sanofi designs its chillers with a priority on natural fluids to limit the GHG impact from fluorinated gases with a high Global Warming Potential (GWP).

Within the scope of the Sanofi-Cofely partnership, we have installed a centralized refrigeration unit at our Sisteron (France) site using the most advanced technologies. This new unit reduces electricity consumption by 7.6 GWh annually, which represents around 15% of the site's electricity consumption. This new plant utilizes ammonia and CO_2 as a heat transfer fluid instead of fluorinated gas which has a high Global Warming Potential.

2.3.1.4. Energy audits and ISO certifications

Sanofi has expanded its program. In 2022 a multi-site ISO 50001 certification was launched. Such certification attests to the effectiveness of our sites' energy management systems.

2.3.2. Reducing our carbon footprint: the Maalox case study

At our Scoppito site, we carried out a carbon footprint analysis of the production of Maalox 400 mg tablets for sale on the Italian market. This study was designed to identify activities that could be modified to reduce energy consumption and CO_2 emissions. Sanofi received a carbon footprint certification following this study, conducted in compliance with the ISO/TS 14067 standard. This is the first time this type of certification has been granted for a pharmaceutical product – indeed, no similar studies have been conducted in the pharmaceutical industry to date. The findings are expected to help us lower production costs and thereby enhance the Company's competitiveness.

2.3.3. Making our buildings and facilities more environmentally friendly

Since Sanofi introduced our Sustainable Building Charter in 2013, we have sought to make our tertiary buildings more eco-friendly. End of 2020, 18 of our main administrative buildings have received LEED (Leadership in Energy and Environmental Design), BREEAM or HQE certification.

In 2015, we inaugurated our new administrative site at the Campus Sanofi Val de Bièvre near Paris. To ensure high-energy performance as part of an eco-responsible approach, the new building is **bioclimatic***

in design. At the site, a specific energy policy supports this approach by strongly encouraging the control of energy consumption, energy-efficient purchasing and the replacement of equipment by identical energy-performing equipment. In addition, the CSVB site received two certifications:

- BREEAM (Building Research Establishment Environmental Assessment Method), with a rating of "very good"; and
- High Environmental Quality (HQE: Haute Qualité Environnementale), with a rating of "exceptional".

*** Bioclimatic** indicates that a building's location and design take into account the local climate and environment to reduce energy required for heating, cooling and lighting. The design of a bioclimatic building is based in particular on selecting suitable materials and using air circulation, solar radiation and geothermal techniques, as well as rainwater recovery.

For more information, see our Document Center: The Sustainable Building Charter.

2.3.4. Our medical sales vehicle fleet

In 2020 the progressive renewal of the Company's fleet was carried out with a focus on improving the fuel efficiency of our fleet and lowering the maximum CO_2 emissions rate to 138 g/km (according to new WLTP regulation). Thanks to a joint effort of Fleet Management, Procurement and HSE, half of our total vehicle fleet is compliant with this limit. During lockdown period, in nearly 70% of the countries, we have adapted our road safety training with online course including an "eco-driving" part to further stretch fuel savings. In addition, Sanofi continues to promote the use of low-carbon cars and now uses a total of nearly 4,000 such cars worldwide: 2,200 cars are running on biofuel (mostly in Brazil); 1,750 hybrid cars (mostly in Japan and Mexico). A roadmap towards Carbon Neutrality has been set and communicated worldwide to accelerate our progress.

3. Greenhouse gas emissions related to Scope 3

Scope 3 greenhouse gas (GHG) emissions are the other indirect emissions (vs. Scopes 1 & 2) associated with other functions of the value chain (including transportation, purchased goods and services, waste generation, etc.).

3.1. CONTEXT

Sanofi worked in collaboration with a third-party expert to develop a robust methodology to estimate the Company's Scope 3 emissions. Sanofi continuously assess the specific categories listed in the GHG Protocol by:

- focusing on the most representative and manageable emissions, within a comprehensive framework; and
- using robust datasets, emissions factors and methodologies to convert those data into powerful and relevant values.

Considering Scope 3 emissions allows us to assess the order of magnitude of CO_2e emissions generated by the Company throughout its value chain. The calculation is based on a large dataset, which generates a significant level of uncertainty.

Since 2020, Sanofi has internalized the calculation methodology to improve the quality of the data collected and refine its assumptions. All categories are important and are analyzed with the stakeholders involved, which has allowed the SBTi commitment to be enhanced.
In 2021, Sanofi developed a digital tool to consolidate, analyze and simulate data from all stakeholders. The use of a data analysis tool, as well as the structure of the database, allows comparisons by model, by organization, by year, and allows for the recalculation of base year values. In the interest of transparency, Sanofi aims to present comparable values from one year to the next (same scope, same assumptions).

3.2. KEY FIGURES

In 2021, Sanofi's total Scope 3 CO_2 emissions amounted to 4,738,904 tCO_2e.

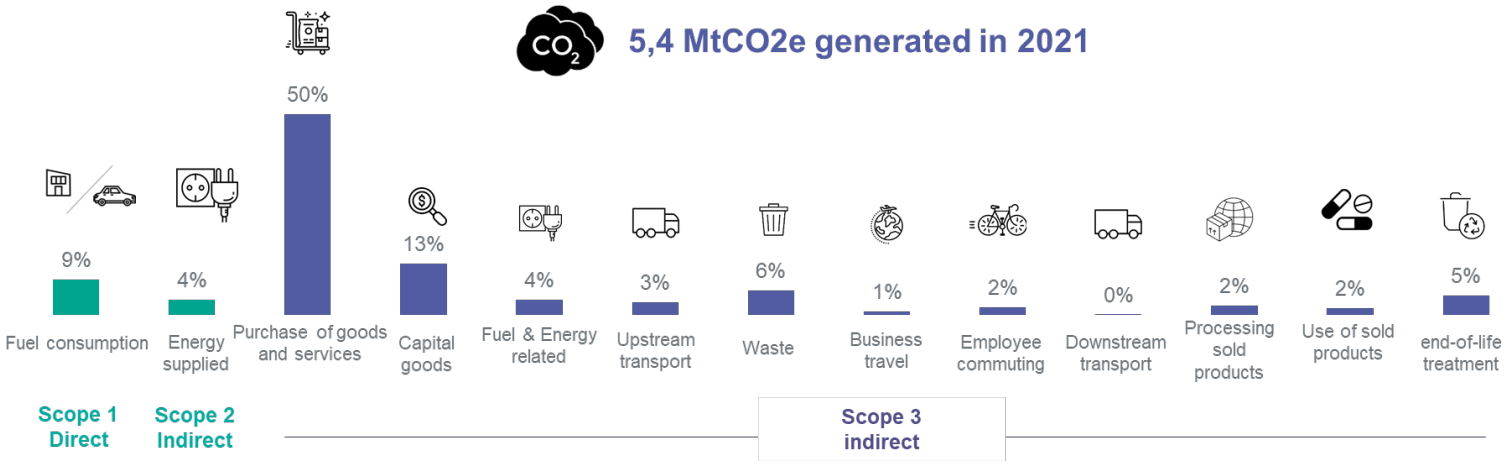
	Category	Description of the method	Source of information	2021	2020	2019 (baseline)
Upstream GHG emissions (Tonnes of CO_2e) [(a)]						
1	Purchased goods	Calculation based on reliable activity data for the goods purchased	Activity data from the purchase database	***2,716,530***	***3,082,857***	***2,975,540***
2	Capital goods	Expenses for all items of the indirect procurement: Manufacturing Capex and services	Economic data from the purchase database	***685,832***	***688,278***	***674,169***
3	Fuel and energy-related activities	Use of data related to energy consumption from industrial and R&D sites and assumptions to calculate emissions from the tertiary sites	Environmental database	***208,340***	***219,529***	***233,552***
4	Upstream transportation and distribution	Calculation based on reliable activity data such as distance between Sanofi sites, center sites and their main suppliers, and emissions data directly provided by suppliers	Supply chain database	***187,526***	***179,730***	***192,750***
5	Waste generated in operations	Raw data reported by industrial and R&D sites, in metric tons broken down for each waste categories	Environmental database	***328,461***	***340,594***	***317,833***
6	Business travel	Based on global distance travelled by type of transport, and including hotel nights incurred during business travel	Purchase database and mileage sent by travel agencies	***37,946***	***87,403***	***168,521***
7	Employee commuting	Details on the number of employees per site combined with a survey	International social report and facility management mapping	***102,441***	***163,688***	***163,516***
8	Upstream leased assets	Included in Scopes 1 & 2 (for energy use)		***N.A.*** [(b)]	***N.A.*** [(b)]	
Sub-Total Scope 3 Upstream				*4,267,076*	*4,762,079*	*4,725,881*

	Category	Description of the method	Source of information	2021	2020	2019 (baseline)
Downstream GHG emissions (Tonnes of CO_2e) [a]						
9	Downstream transportation and distribution	Estimate of the distances and transportation modes for patients to buy Sanofi products		***904***	***769***	***874***
10	Processing of sold products	Number of APIs and semi-finished products sold to other companies has been used, modeled, and evaluated thanks to several steps of calculation and hypothesis	Sanofi third-party sales	***117,736***	***141,422***	***112,518***
11	Use of sold products	Assumptions based on primary data, including distances travelled, energy consumption for refrigeration, and the nurse's injection habits		***90,109***	***70,156***	***55,855***
12	End-of-life treatment of sold products	French collection efficiencies have been used and extrapolated worldwide since information on other countries are difficult to gather	Purchase database	***263,079***	***258,967***	***215,593***
13	Downstream leased assets	Not relevant		***N.A.[b]***	***N.A.[b]***	
14	Franchises	Sanofi does not operate franchises	Sanofi turnover	***N.A.[b]***	***N.A.[b]***	
15	Investments	Included in other categories when relevant		***N.A.[b]***	***N.A.[b]***	
Sub-Total Scope 3 Downstream				*471,828*	*471,314*	*384,840*
TOTAL SCOPE 3				**4,738,904**	**5,233,393**	**5,110,721**

(a) CO_2e = CO_2 equivalent.

(b) Emissions categories according to the GHG protocol: emissions from Cat 8 and Cat 13 (upstream and downstream leased assets) and Cat 14 (Franchises) are not significant. Cat 15 is considered as not applicable, as the emissions of products and services resulting from this collaboration are already accounted for in the other categories.

Figure 1: Scopes 1, 2 & 3 emissions in 2020



2021 Sanofi's CO_2e impact: 87% is generated by Scope 3 categories.

The average carbon footprint of a person in France is greater than 11 tCO_2e/year*.

The $MtCO_2e$ generated by Sanofi is equivalent to the annual footprint of more than 500,000 French people.

*Source: Ministry of Ecological Transition and Solidarity DATA LAB 2020 The carbon footprint of French people remains stable.

3.3. EXPLANATION OF THE MAIN CHANGES

Greenhouse gases emissions are decreasing in category 1, which is directly related to the volume of goods and services purchased that has decreased in quantity between 2019 and 2021.

The impacts of Sanofi's significant efforts to transition to renewable energy are found in category 3, fuel and energy activities.

The COVID-19 pandemic over the entire period caused a significant decline in both work and commuting trips.

Emissions from downstream activities (categories 9, 10, 11) are directly related to the volume of products sold, included in the calculation scope, such as intermediates, which increased in 2021.

3.4. HIGHLIGHTS

3.4.1. Supplier engagement

Environmental awareness has significantly increased among customers, investors and society in general. Not complying with sustainability expectation and requirements bears severe financial and reputational risks for Sanofi, with possible impacts of losing market share, being blacklisted from customer´s tenders or losing talent retention.

Sanofi wants to partner with the best-in-class suppliers, be inspired by best practices and create a new dynamic among our supply chain to support fair and sustainable economic growth to deliver social benefits through procurement. We plan to achieve this ambition by including sustainability needs at the core of procurement activities.

We will engage suppliers to commit in improving their environmental footprint. Almost 90% of Sanofi´s total emissions are Scope 3 emissions, while Purchase of Goods & Services and Capital Goods represent 64%.

Procurement plays a key role on our journey towards Carbon Neutrality in 2030 and Net Zero in 2050.

In 2021, Sanofi, along with nine other global pharmaceutical companies, launched the ENERGIZE program, aiming to help our shared supply chains adopt 100% renewable electricity and reduce greenhouse gas emissions. This first-of-its-kind industry program will enable pharmaceutical suppliers to learn more about renewable energy adoption and contracting. This gives suppliers – who may not otherwise have the internal resources or expertise available – the opportunity to participate in the market for power purchase agreements (PPAs).

3.4.2. Reducing CO_2 emissions due to business travel and employee commuting

CO_2 emissions from business travel and employee commuting are part of our Scope 3 CO_2 emissions.

As part of our commitment to reduce our CO_2 emissions, Sanofi has taken steps to encourage employees to use lower carbon methods of transportation. For example, at our Campus Sanofi Val de Bièvre site, electric buses are provided to drive employees from the site to the subway. Employees are strongly encouraged to choose public transportation and the site is equipped with a room for bikes and reserved spots for electric vehicles. To promote carpooling, a mobile application called "Smart Autostop" makes it easy for employees to locate nearby passengers and drivers for the work-home commute.

In order to limit emissions from business travel, a global internal travel policy, which applies to all Sanofi sites worldwide, sets criteria when preparing a business trip. Those criteria are automatically set within the booking tool used internally, depending on the duration of travel. Moreover, Sanofi promotes green meetings by encouraging the use of telepresence and high-definition video-teleconference equipment at several of our sites. Such rooms allow participants to avoid traveling to different sites and significantly reduce travel-related CO_2 emissions. As recommended by our global travel policy, virtual meetings option must be assessed and preferred before taking any decision to travel for business.

3.4.3. Supply chain as lever for reducing CO_2 emissions

Every day, nearly 15 million medicines are distributed worldwide. Our supply chain is designed to deliver treatment while ensuring product quality. Aware of the impact that its medicine distribution activities can have on the climate, Sanofi has been providing solutions for over ten years. Sanofi is committed to reducing its carbon footprint by adopting responsible practices to reduce our greenhouse gas emissions throughout the world.

Solutions to reduce the carbon footprint:

- Sanofi has been working on its international transport network significantly by reducing use of air transport and increasing maritime transports which is less carbon intensive. Maritime transport avoids the emission of 260,000 tons of CO_2 annually.

Other actions to create a more efficient and environmentally friendly multimodal transport chain were organized:

- decrease air transport, and prioritize rail and waterways transports;
- increase the fill levels of trucks and sea containers;
- develop rail for intra-European deliveries;
- experiment with electric and natural gas vehicles for in-town deliveries;
- design packaging to reduce volume and optimize transport; and
- group product shipments and pool transport to reduce the number of trucks on the road.

3.4.3.1. Key figures:

- 80% of reduction of CO_2 emissions over ten years; and
- 86% of the intercontinental product transportation are made by sea route.

3.5. RELIABILITY OF THE DATA AND METHODOLOGY USED FOR THE DIFFERENT CATEGORIES:

The maturity grade calculation is based on 8 criteria from 1 to 5:

- quality of Modeling;
- emission factor scope;
- hypotheses;
- reliability of EF source;
- entirety of the perimeter;
- time frame;
- quality of data source; and
- data completeness.

Num	Category	Quality of the data	Quality of EF / Modelling
1	Purchased goods and services	3,5	3
2	Capital goods	3,5	2
3	Upstream Fuel and Energy	5	3,5
4	Upstream Transportation	3	2,25
5	Waste Management	5	3,25
6	Business Travel	3	3,25
7	Employee Commuting	3,25	2,25
9	Downstream Transportation	1,25	1
10	Processing of Sold Products	2	1,5
11	Use of Sold Products	2	1,5
12	Product End of Life	2,75	2

For more information, see our Document Center:

- *Transporting Medicines and Vaccines factsheet*
- *Sustainable Building charter*
- *HSE Policy*
- *HSE Management System factsheet*
- *Eco-Design factsheet*
- *Waste Management factsheet*