

SANOFI'S RISKS AND OPPORTUNITIES RELATED TO CLIMATE CHANGE

I. BACKGROUND

Climate change is exacerbating health issues and will be a challenge for communities, with severe consequences for people living today, especially the poorest and most vulnerable, as well as future generations. Climate change has been identified as a topic that could lead to potential risks if the company does not address it adequately.

Tackling the issue includes upholding the company's responsibilities, first by reducing its carbon footprint (**mitigation** aspects) and second by developing new healthcare solutions to address future health needs linked to the evolution of diseases related to climate change (**adaptation** aspects), and to seize opportunities while seeking new partnerships and exploring new ways of working.

II. RISKS

All the risks listed below have financial impacts and consequences on supply continuity.

1. Changes in regulations

Cap and trade schemes

Our major European sites are under the European Emissions Trading System (ETS) allowances. For the period 2021-2030, a restricted access to free-allowances has already given in 2018 a price signal (price multiplied by 3 in one year).

How does Sanofi manage this risk?

In order to reduce this risk, Sanofi strives to limit its CO₂ emissions. By reducing energy consumption, increasing energy efficiency and shifting to renewable fuel, the emission credits that we are required to purchase decrease and so reduce our price dependency. We are pursuing multiple projects to achieve a reduction in fossil energy consumption.

*For more information, see our Documents Center:
- Carbon Footprint: CO₂ Emissions – Scope 1&2 Factsheet*

Carbon taxes

Carbon taxes generate financial risks especially if tax levels are increased. Carbon taxes are attached to fossil energy consumption. An increase in carbon taxes directly results in higher energy costs. The European Commission is working on a new directive to define a minimum CO₂ tax that the Member States will then have to put into force. This carbon tax is expected to have an impact on fossil fuel prices and consequently on electricity prices and energy-intensive goods prices. Any increases in taxation will result in an increase in operational costs, which must be covered.

How does Sanofi manage this risk?

By fulfilling its target to reduce CO₂ emissions and energy consumption, Sanofi also mitigates this risk. Here is an example: At various European sites, we are designing combined heat and power units that will enable us to significantly reduce our energy spending and lower our exposure to any future carbon tax, since the electricity produced on-site should be less carbon intensive than the electricity supplied from high carbon intensive grids.

2. Physical risks

Extreme weather events (precipitation, floods, droughts, etc.)

Some of our facilities are located in geographical zones where extreme weather events such as precipitation or droughts can have a major impact on our production facilities and disturb our upstream and downstream supply chain. This risk may occur at our sites on the Northeastern coast of the United States, in Australia and Western Europe, as well as in Southeastern Asia.

How does Sanofi manage this risk?

To prevent these risks, our facilities are constructed to the highest standards, using state-of-the-art engineering techniques and taking maximum constraints into account in the design phase. In addition, during site visits, technical experts from the company's insurers issue recommendations

for dealing with extreme weather conditions, such as putting in place an emergency plan for flood risks. Risks related to natural disasters are also taken into consideration in Sanofi's crisis management plan, across all levels of our production sites and supply chains.

Access to natural resources

Climate change threatens natural resources such as biodiversity. A reduction in biodiversity could affect our research & development potential when it comes to identifying new pharmaceutical molecules. According to a survey carried out by the EFPIA, from 1981 to 2006, of more than 1,184 new molecules brought to market, only 30% were totally synthetic drugs. The rest were derived from natural products or their derivatives, which risk being impacted by a loss of biodiversity. Water is another natural resource that may be threatened by climate change. Clean water with specific composition is required for the synthesis of Active pharmaceutical ingredients, for the production of pharmaceuticals (including vaccines and injectables) for utilities (cooling water, steam, service water) and for some manufacturing operations such as cleaning processes. This vital resource may become scarce due to climate change in some areas. To date, thanks to local internal data and a comprehensive external review, we were able to conclude that only 4 of our sites appear to be affected by a potential water scarcity issue, thus potentially impacting our business continuity.

How does Sanofi manage this risk?

In order to preserve biodiversity, Sanofi implemented actions such as limiting the quantities of genetic resources used for research, identifying protected natural substances (CITES list) and finding alternative solutions. We also establish contracts with suppliers stipulating that they must comply with international conventions and national regulation on preserving biodiversity, including with the Nagoya Protocol. Since 2015, a dedicated expert group in charge of ensuring Sanofi compliance in the signatory countries, has been created and reports to Sanofi Bioethics Committee. At Sanofi, we are well aware of the critical challenge posed by the dwindling availability of vital freshwater resources and in order to contribute to preserving water, we defined an objective to reduce our water withdrawal by 10% by 2020 compared to 2015. In 2018, we reduced our water consumption by 14% compared to 2015. According to our internal HSE standards, all our sites worldwide must establish and follow a water management plan. For potential sites located in water scarce areas, the company requirement is to implement and follow a water reduction program.

3. Reputational risks

Climate change has become a highly sensitive topic for multinational companies. Stakeholders demand companies to act responsibly and limit their negative impacts on the climate. Investors pay attention to the company's extra-financial performance. Failing to answer stakeholders' expectations and a low score in extra financial notations would result in a negative impact on Sanofi's reputation and in lower investments.

How does Sanofi manage this risk?

Sanofi has set objectives to reduce CO₂ emissions by 50% by 2025 compared to 2015. In collaboration with the Procurement direction, a global policy was launched in late 2018 to promote the use of renewable energy (solar or wind energy sources) by developing partnerships. Such objectives provide the framework to maintain carbon reduction which decreases the risk of a negative impact on Sanofi's reputation. To achieve the target, Sanofi implemented a wide range of projects and signed a master agreement with ENGIE for the construction of high efficiency cogeneration units and/or heat production units powered by renewable energy.

4. Financial risks

Energy pricing

A shortage of fossil fuels combined with significant energy demand and high extraction costs can lead to a long-term increase and substantial volatility in energy prices over limited periods of time, especially in the event of a potential phasing-out of nuclear power.

How does Sanofi manage this risk?

In response to these issues, we aim, first, to **optimize and reduce our energy consumption in order to help limit the effect of volatility and decrease the average cost of energy**. We implemented an energy saving program at all our sites, focusing especially on air treatment systems as they are accounting for up to 70% of the energy consumption of some pharmaceutical sites or vaccines. Since 2013, a tool for energy performance management has been deployed in order to identify potential areas of energy savings. In addition, a pilot project in 2016 consisting in the organization of energy performance workshops helped the Maisons-Alfort site in France, establish a robust action plan. We aim to track variations in energy prices in order to forecast their impact. Sanofi regularly assesses our possible vulnerability to fossil fuel energies price fluctuation. For example, the procurement function assesses purchased electricity and purchased natural gas price-related risks. A local strategy is validated by the functions (finance or site management) that "own" this process from a budgetary viewpoint, and formalizes actions to manage this risk. Local price risk management committees are established. The risk sensitivity and mitigation plan depends on local market constraints, price trends and exposure. Risk mitigation includes spreading price risk by purchase electricity and natural gas through multiple transactions, establishing target prices and defining processes to monitor the energy market.

5. Health risks

Climate change may have direct health impacts as it can lead to climate phenomena, heatwaves, extreme cold, food shortages, difficulties in accessing drinking water and increased air- pollution. At the same time, climate change induces indirect effects by creating favorable conditions for the deepening and spread of vector-borne diseases. Such public health risks may also affect our employees and our business continuity.

How does Sanofi manage this risk?

As a life sciences company, Sanofi seeks:

- To provide solutions to prevent and respond to the direct and indirect impacts of climate change on health: This includes the development of medicines and vaccines to address the health risks of diseases such as dengue or malaria. Beyond the treatment or cure, Sanofi takes action in the field alongside its partners, working with local stakeholders to help individuals protect themselves against these diseases, including through increasing awareness.
- To contribute to general efforts by reducing our own carbon footprint all along the value chain
- To contribute to increasing awareness of the impacts of climate change on health and working to put it on the public agenda: Recognizing that the company does not have all the answers, Sanofi engages concerned stakeholders to focus collectively on this challenge. As highlighted in a report on health and climate change published by *The Lancet* (see end of this document), "A public health perspective has the potential to unite all actors behind a common cause—the health and well-being of our families, communities and countries." If we act now, there is still time to manage the consequences of climate change on the health of the global population.

III. OPPORTUNITIES

The opportunities arising from the abovementioned risks are mainly focused on the establishment of sound mitigation and adaptation plans.

1. Mitigation: Reducing the impact of Sanofi's activities on climate change

Sanofi has set a goal to reduce CO₂ emissions from its industrial, tertiary and R&D sites by 50% between 2015-2025. By 2018, Sanofi had reduced its CO₂ emissions by 9% compared to 2015.

Such objectives are opportunities for Sanofi to innovate by developing new eco-friendly solutions and investing in cutting-edge technologies with rapid return on investment.

Science-Based Targets initiative (SBTi):

In March, Sanofi took a major step to align its carbon reduction performance to fall below the 2°C limits of global warming. Sanofi committed to the Science-based Targets Initiative (SBTi), which provides a framework for companies to define how much and how quickly it must reduce its greenhouse gas emissions.

As part of the SBTi, Sanofi will define its carbon reduction targets across the entire value chain (Sanofi Carbon Footprint) and deploy ambitious action plans across its operations (e.g. R&D, business, Procurement, External Manufacturing, etc.).

The environmental strategy "Planet Mobilization" will support Sanofi in these efforts to build on the carbon measurements performed over the last few years, providing a robust foundation to achieve these ambitious goals.

Task force on Climate related Financial Disclosure (TCFD)

In 2018, Sanofi sought ways to improve its compliance with the requirements of the Task Force on Climate related Financial Disclosure (TCFD).

Sanofi is evaluated by the Carbon Disclosure Project (CDP) through the "Climate change" questionnaire.

At the beginning of 2019, Sanofi obtained an "A-" rating, which is stable compared to the previous year, and ranks among the best in the pharmaceutical sector.

Transport of medicines and vaccines

As a global company, Sanofi distributes its products throughout the world: each year, Sanofi delivers 4.2 billion packages of medicines and vaccines worldwide, or 15 million packages per day.

As an indispensable part of access to care (delivering treatment as close to each patient as possible while ensuring product quality), transportation is a key factor in reducing the emissions of greenhouse gases (GHG) that contribute to global warming.

1) To reduce its emissions of greenhouse gases, Sanofi gives priority to shipping by rail and sea, increasing the fill rate of trucks and containers, pooling the means of transport to reduce the number of trucks on the road and experimenting with electric or natural gas vehicles for deliveries in cities. Meanwhile, the company designs its packaging to limit volumes and optimize transport.

In 2018, Sanofi made 84% of its intercontinental shipments by sea compared to an average of 25% for other health companies. Maritime transport emits 30 times less CO₂ than air transport.

Industrial and R&D sites

Sanofi is developing a policy to reduce GHG emissions from its industrial and R&D sites.

Sanofi promotes the use of low-carbon energies and contributes to the preservation of resources:

- The Swiftwater site in Pennsylvania has invested in a 30-km pipeline to switch from fuel oil to natural gas, thus reducing CO₂ emissions by approximately 10,000 tons/year and is now using 100% of zero carbone electricity
- A co-generation site in Italy in collaboration with Cofely GDF Suez is reducing the site's energy demand by 50%.
- Use of wind energy in India (Ankleshwar) covers 30% of the site's needs.

- A program to reduce energy and water consumption and CO₂ emissions was set up at the Meril R&D site in Katharinenhof, Germany, where 75% of the energy used is from renewable sources.
- Eco-efficient buildings are being developed for Sanofi and Genzyme in the United States.

2. Adaptation: Providing solutions to prevent and respond to the impacts of climate change on health

The World Health Organization (WHO) projects nearly 250,000 additional deaths annually between 2030 and 2050 due to malnutrition, malaria, diarrhea and stress related to heat. To address the challenge that threatens the progress made over the last 50 years in development and global health, Sanofi supports an ambitious agreement to address the stakes involved. For this reason, Sanofi is an official partner of COP21.

Developed countries are not immune to the above mentioned health risks. Climate change combined with international trade is altering the geographical distribution of certain diseases. For example, the mosquito vector for dengue and for chikungunya has been introduced in France and is now present in 22 French *départements*. According to experts, it will probably be colonized throughout continental France by 2030.

Sanofi contributes to anticipating these health impacts by analyzing its portfolio in order to deliver better, adapted services and products to address future expanding vector borne diseases and respiratory diseases due to air pollution, including allergies.

For more information about Sanofi initiatives regarding vector-borne diseases and allergies, see our Download Center:

- *Climate Change and Health Factsheet*

Supporting communities through emergency assistance

The multiplication of extreme weather events is also a risk factor for people's health and well-being, especially in developing countries.

Healthcare is one the most vital needs in humanitarian disasters.

As a health partner, the Sanofi Espoir Foundation plays an important role in coordinating field assistance in emergency situations.

Depending on the situation and the health needs that have been identified, the Foundation's response can result in financial donations to NGOs and associations, or donations of medicines and vaccines in partnership with the Tulipe association. In 2018, the Foundation brought supported to populations in Bangladesh and Democratic Republic of Congo.

3. Raising awareness

Sanofi is committed to raising awareness as widely as possible regarding the impacts of climate change on health and putting this issue on the public agenda.

1. Advisory board (external knowledge and expertise)

Sanofi established an advisory committee to frame the issue of climate change's impact on health and to help define the company's messages and position on the subject. This committee was composed of experts in the fields of climate and health and Sanofi representatives. The work of the advisory committee took place during 2015 and helped define Sanofi's approach in three areas: to provide health solutions that respond to health needs related to climate change; to take action to reduce emissions of greenhouse gases across Sanofi's entire value chain; and to raise awareness and mobilize all stakeholders.

2. COP21 partner

With its expertise in health and knowledge of diseases affected by climate change, Sanofi is an official partner of COP21. For Sanofi, COP21 was an opportunity to mobilize the international community on this major issue and to raise awareness of the consequences of climate change on health.

In addition to this partnership, Sanofi participated in a campaign during COP21 to raise general public awareness and highlight solutions through Solutions COP21, at the Grand Palais.

In 2016, Sanofi attended the COP22 meeting in Marrakech to highlight the company's commitment and achievements on environmental issues.

3. Support for *The Lancet* Report

Through the voice of its CEO, Sanofi is one of the pharmaceutical companies that have supported the report of the 2015 Commission on Health and Climate Change published last June in *The Lancet*. Signing this statement at the company's highest level shows the importance attached to an issue that is too often neglected on the international stage.

More information on the findings of *The Lancet* Commission on Health and Climate Change 2015 may be found here: <http://climatehealthcommission.org/>

Statement available at:

<https://climatehealthcommission.files.wordpress.com/2015/04/pharmaceutical-industry-statement-final.pdf>

For more information about Sanofi's commitment to the fight against climate change, see:

- *Sanofi's engagement in COP21:*
<https://www.youtube.com/watch?v=dHaie3T83HI>
- *Understanding the link between climate change and health:*
<https://www.youtube.com/watch?v=7F23TYUIAn8>

- *R&D: Sanofi's research on infectious diseases and their evolutions due to climate change:*
<https://www.youtube.com/watch?v=OYPADQBpVQY>
- *Adaptation: Our solutions to tackle health issues related to climate change:*
<https://www.youtube.com/watch?v=Ru02lwQx4gU>
- *Dengue: Our commitment against dengue fever, a disease impacted by climate change:*
<https://www.youtube.com/watch?v=1j7FUmkDr5Q>
- *Mitigation, Sanofi's carbon path:*
<https://www.youtube.com/watch?v=xuWOseEoy5U>
- *Transport of medicines and environmental preservation:*
<https://www.youtube.com/watch?v=egp0ir5wxVE>
- *Biodiversity at the heart of Sanofi's actions:*
<https://www.youtube.com/watch?v=QVNYxeUUyrA>
- *More information on Sanofi's website:*
http://en.sanofi.com/csr/planet/cop21/sanofi_partner_cop21.aspx