

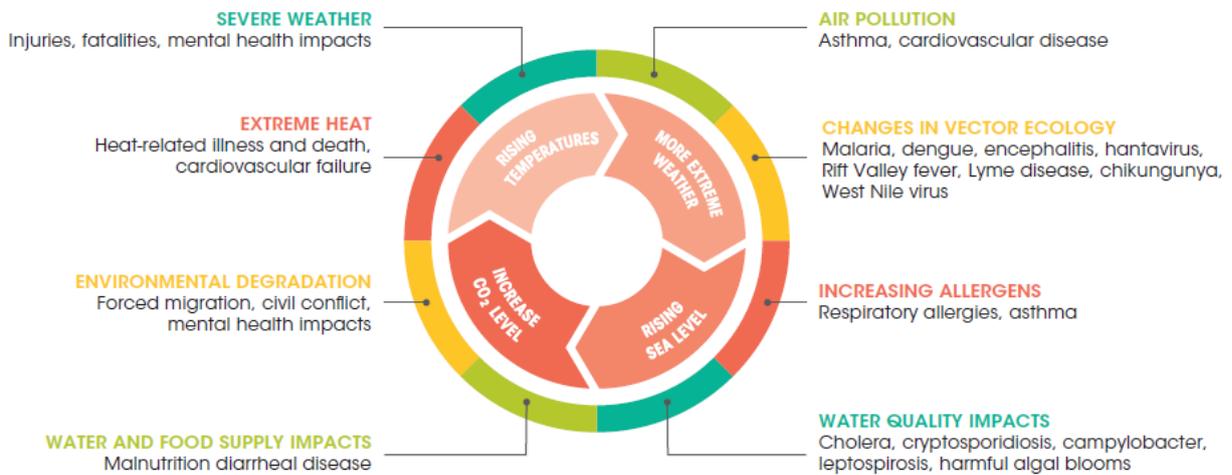
CLIMATE CHANGE AND HEALTH

I. BACKGROUND

Human health and the eco-system we live in are interdependent. Sanofi cares about biodiversity around our sites and in the products we use. Current and future climate impacts have an important effect on biodiversity and expose a growing number of people to health threats. We also consider our environmental footprint and seek to reduce it. As a global healthcare company, Sanofi has shown concern about climate change and health, especially for the most vulnerable populations. We believe that the company can play a key role in anticipating these health challenges. During the COP21 conference in Paris, in 2015, Sanofi was an official partner of the meeting and presented several of our commitments on this topic – from R&D about infectious diseases and the development, production and distribution of the dengue vaccine. Sanofi is among the pharmaceutical companies that supported a report published by *The Lancet* concerning climate change and health.

For more information, see our Documents Center: Sanofi's Risks and Opportunities related to Climate Change Factsheet

The US Centers for Disease Control and Prevention in Atlanta developed the following diagram to show the direct and indirect impacts of climate change and the consequences on human health.



Source: Center for Disease Control and Prevention (CDC-Atlanta, USA).

This figure presents two of the major health consequences of climate change that Sanofi is following: evolution of vector-borne diseases and exposure to air pollution.

Sanofi is pursuing the efforts of awareness among the employees and this subject was shared with all employees during the Environmental days in October 2017, showing the importance of lowering our environmental footprint and our responsibility on being ready to answer for people health. Currently Sanofi has a vaccine against Japanese Encephalitis, a very dangerous disease in all Asian countries.

II. EVOLUTION OF VECTOR-BORNE DISEASES

Most vector-borne diseases are associated with mosquitos, fleas and ticks: malaria, dengue, Zika and Lyme disease. Several studies indicate that the reservoirs of vectors and consequently vector-borne diseases are subject to changing geographical and temporal patterns due to climate change, primarily different temperature and humidity levels. The increase in risk of disease transmissions is due to reduced land territory (flooding, deserts...), leading to migration of populations, and gatherings in refugee camps or around big cities. Major efforts are being deployed to understand these changes and build awareness among the populations they concern, including healthcare professionals, patients and the public.

1. Dengue

The threat of Dengue has grown 30-fold in the last 50 years and today half of the world population is at risk. Epidemics occur on a regular basis in countries in Latin America and Asia. Sanofi Pasteur's goal is to make the dengue vaccine available to support the World Health Organization's ambition to reduce dengue mortality by 50 percent and morbidity by 25 percent by 2020. For example, awareness programs have been underway in Malaysia since 2014, such as the Dengue Patrol Program for schoolchildren.

2. Malaria

Malaria is the vector-borne disease that seems to be most sensitive to long-term climate change. The disease has a pattern that varies seasonally in highly endemic areas. Recent studies have shown that the malaria epidemic risk increases around five-fold in the years after an El Nino event and in Cambodia, a parallel observation was made between the extended rainy season and the malaria occurrence. As children are strongly impacted by malaria, our program "Schoolchildren Against Malaria" provides educational tools for teachers and children in Africa to discover the basics of malaria. In addition, we are taking different actions to help build or reinforce the resilience of local health infrastructure. Sanofi is representing the private sector in international meeting about eradication of malaria in the Mekong region.

3. R&D programs

Sanofi is also working on several programs for these climate-sensitive diseases:

- Sleeping sickness with an oral treatment – under review by Health authorities. Objective of total eradication by 2020.
- New vaccine against yellow fever (innovative on cell culture) specially for Latin America
- Potential new treatments of malaria in order to cope with potential resistance

III. AIR POLLUTION AND RESPIRATORY ALLERGIES

1. A major health concern

Air pollution is considered to be a major global threat for respiratory and non-respiratory diseases, causing over three million deaths a year. It is estimated that 9,000,000 persons per year die because of air, water, and soil pollution. Death caused by air pollution (ambient and household air pollution) accounts for more than 6,000,000 deaths per year. Of note, most of these disease processes are within either our clinical (asthma, airway disease, and infection) or research (immune response and inflammation) domains. The field of allergy and immunology is poised to bring environmental awareness to clinical practice. This includes ensuring that appropriate medications are being used, reducing use of tobacco and biomass fuel use indoors, and patient education regarding the effect of ambient pollutants on disease outcomes [Peden D. *J Allergy Clin Immunol* 2018; 141:878-9; Landrigan P.J. *Lancet* 2018; 391: 462–512]. Many studies show the impact of air pollution on the onset and severity of rhinitis and asthma in most areas of the world, including urban areas. However, more studies are needed to better understand the links between allergy and pollution, and to understand the impact of pollution on the prevention and control of allergic diseases.

Through its Global CHC Allergy Medical Team, Sanofi is devoted to contributing to improve awareness of the role of indoor and outdoor air pollution, in aggravating allergic respiratory symptoms, confirming Sanofi's commitment to anticipate the consequences of climate and environmental changes on health.

2. Physicians and patients' awareness

Further, the Global CHC Allergy Medical Team organized the Allergy & Air Pollution Training Meeting in Singapore in May 2016, meeting with 52 physicians from 21 countries. Local and regional scientific meetings continue taking place in 2017 to cascade information in all regions where Sanofi operates. For example : Asia – International symposium on Allergic Airways Diseases: 500 HCPs and more than 2700 following the live Webcast, in Mexico 1100 Allergologists and pediatricians, Colombia more than 900 physicians have been trained. In India, Sanofi has collaborated with the National Association of Otolaryngologists to define Pollution as the “National theme for 2017 congress” and launch the **#RESOLUTION AGAINST POLLUTION** campaign with more than 3500 Healthcare professionals. In addition, Sanofi and Times now have shown a TV program seen by 1.1million viewers across India.

IV. PUBLICATIONS

For more information about the findings of **The Lancet Commission on Health and Climate Change 2015** and **The Lancet Countdown: Tracking Progress on Health and Climate Change 2016**, see: <http://climatehealthcommission.org/> and 2017, [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(17\)32464-9/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)32464-9/fulltext)

For air pollution and respiratory allergies: Peden D. *J Allergy Clin Immunol* 2018; 141:878-9; Landrigan P.J. *Lancet* 2018; 391: 462–512].