

# TRANSPORTING MEDICINES AND VACCINES

G4 indicators : G4-DMA, G4-EN17

## I. BACKGROUND

As a global healthcare leader fulfilling a public health mission, Sanofi considers the supply chain and the delivery of medicines to be among the company's most important responsibilities.

Sanofi is committed to make every effort to ensure that the supply chain will continue to deliver medicines and vaccines to the market without interruption. Protecting patients' health is a priority challenge every day.

Distribution and transportation are the last part of the supply chain, which is dedicated to serving all patients worldwide. The supply chain's purpose is to deliver our products in close proximity to patients and to ensure a high standard of quality.

Distribution and transportation must be performed with an eye on reducing environmental impacts by controlling CO<sub>2</sub> emissions. Sanofi has made clear commitments to ensure a sustainable medicine transportation organization and to reduce the company's direct and indirect greenhouse gas emissions.

### 1. Organization and network

The Transportation Department is part of the Supply Chain within Global Industrial Affairs. Sanofi's transportation strategy is to guarantee the continuous supply of drugs and vaccines to our patients without any disruption. This global strategy has been developed and implemented throughout the company.

The Supply Chain management team is responsible for enforcing various processes on all sites where the company operates (more than 100 Sanofi plants and 170 distribution centers belonging to Sanofi or external partners), ensuring controlled processes as well as compliance with our continuous improvement policy.

In 2014 a project called SARR (Sea, Air, Road and Rail) was launched with two main objectives, one strategic and the other operational. A tool was designed to ensure the planning and operational management of transport, secure the control of transport invoices and also support the organization of transportation tenders, perform extensive simulations, ensure complete reporting of the activity and give global visibility on all the main transportation flows. Since October 2016 we have launched the tool, the Transportation Management System (TMS). At the Croissy Export platform, TMS allows compliance with transport regulations, the creation of document flows and optimized cost effectiveness.

A dedicated transportation team leads from Gentilly (France), working with a full network of people around the world.

Once a year a meeting of the worldwide network is organized to strengthen team spirit, review constraints and solutions, and celebrate successes.

### 2. Several ways to transport our medicines and vaccines

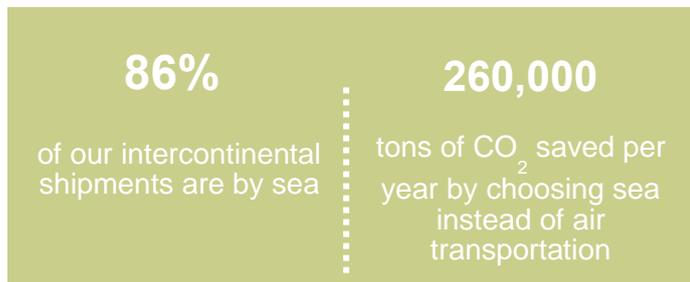
- Delivery of products between our plants: We deliver products between our chemistry plants and pharmaceuticals plants in the most optimized way, determined according to location.
- Delivery to our distribution centers: Our products are consolidated and exported from our export hub to our local distribution centers. Pallet optimization and truck occupancy are key parameters to improve the transportation of our goods. This organization enables massification associated with cost competitiveness and a sustainable strategy.
- Delivery to our customers: This includes wholesalers, hospitals and pharmacies.
- Delivery in cities (the last kilometer): With its partner suppliers, Sanofi has equipped delivery vehicles to run on gas or electricity. In Paris, pharmacies are supplied by a truck fleet fuelled by natural gas.

## II. ACTIONS

- Choose sea instead of air transportation for long-distance shipments.
- Increase the level of occupancy for truck and sea containers.
- Prefer railway and waterways from our distribution centers to export ports.
- Develop railway transportation for intra-EU deliveries.
- Consolidate flows and mutualize transport to reduce the number of trucks on the road.
- Promote green models of transportation with all forwarders.

## 1. Encouraging the use of sea transportation instead of air transportation whenever possible

Sea transportation is 30 times less polluting than air transportation.



In Europe, regular flows are switched from road to rail transportation, for example from Riells (Spain) to Frankfurt (Germany) and from Frankfurt to Milan (Italy).

## 2. Choosing alternatives to road transportation whenever possible

At the Saint Loubès Distribution Center, in 2016 fluvial transportation was used from Le Havre to Bassens (near Bordeaux). In CO<sub>2</sub> emissions, we saved the equivalent of twice the distance from Paris to Vladivostok (Russia) by road. This allows us to ensure continuity with the maritime route for our production in India.

From our Export Distribution Center in Croissy-Beaubourg (France), a project is also being planned from Switzerland to Rotterdam (Netherlands) using fluvial transportation.

Sea transportation for destinations outside Europe went from 78% in 2011 to 86% in 2016, and was stable this year.

## 3. The challenges of complying with new regulations

In order to guarantee the quality of distributed medicines and vaccines, transportation has to respect very strict rules, especially in terms of temperature. In 2013, the EU implemented new Good Distribution Practices (GDP) to protect medicinal products.

The appropriate temperature must be maintained during the transportation of medicines, regardless of external conditions.

Vaccines and insulin are extremely sensitive. To respect the cold chain during the transport of these products, the temperature must be maintained between 2° and 8°C.

### The Climpact tool

For three years, Sanofi has been collaborating with a start-up company on a very innovative project called Climpact. This project uses data from weather forecasts to choose the best transportation mode and the one that will generate the lowest amount of CO<sub>2</sub> emissions.

Thermo-trucks are able to maintain the parameters so that the cold chain is respected, but such trucks and equipment also consume more energy and generate more CO<sub>2</sub> emissions than standard trucks.

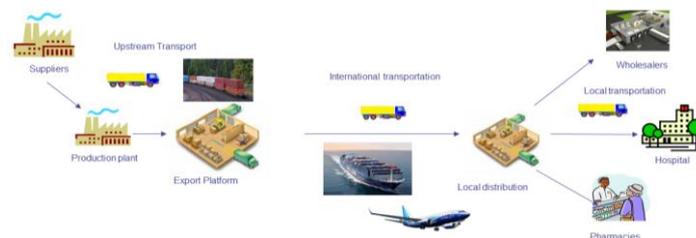
Climpact is an expert, innovative system that helps us select the type of truck we should use depending on the weather conditions for the duration of the transport. The chosen solution ensures the transportation operation is compliant while meeting strict quality standards.

Climpact has developed an expert system that recommends the most suitable mode of transport and the one that consumes the least energy in relation to temperature requirements.

The challenge was to provide a tool to meet this demand while addressing another important demand for Sanofi: ensuring the quality of medicines throughout the trip.

This program takes into account weather forecasts in real time during the trip and enables the choice of the most suitable and least energy-consuming mode of transportation. The modeling analysis of all this information simulates the internal temperature in the truck and proposes the appropriate equipment: box trailers vs. temperature control trucks.

In 2016, the program was used for 541 shipments. Without this tool, 100% of the deliveries would have been made using thermo-trucks. Thanks to the Climpact tool, 38% of the shipments used box trailers. A total of 95% of the shipments followed the recommendations of the Climpact tool. Being able to choose the less expensive option made it possible to lower costs while reducing CO<sub>2</sub> emissions.



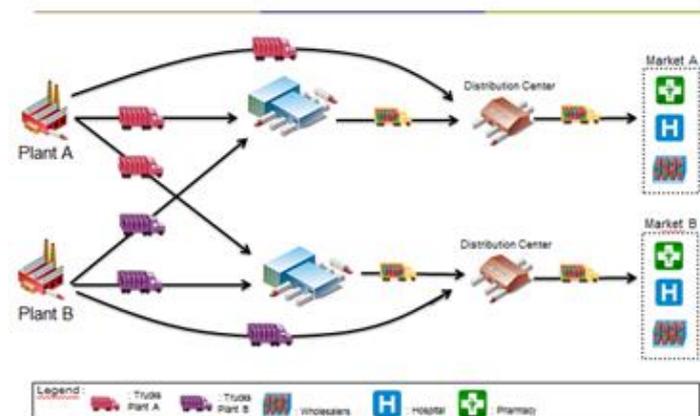
## 4. AGILE FLOW – Frequent Shipment

The Supply Chain has developed the “Agile Flow–Customer Oriented” program as part of the Sanofi Manufacturing System (SMS).

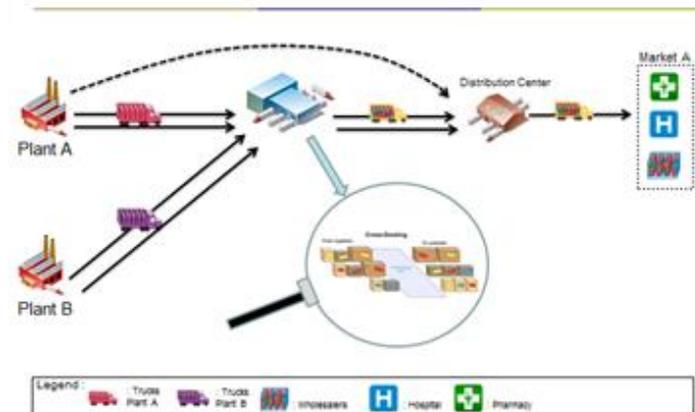
A simple process was set up to optimize delivery from our production plants to the final customer: Frequent Shipment.

This process represents a real change in our way of working. It means we can immediately ship a released product from the production plant to the distribution center at a fixed and daily frequency. In the distribution center, cross-docking is taking place and full trucks are leaving the center for their final destination with goods coming from several plants.

### BEFORE



### AFTER



In 2015, the process was initiated with four production sites and our distribution center in Croissy Beaubourg. In 2016, additional French, Italian and Hungarian sites as well as the distribution center in Budapest were included in the process. The goal in 2017 is to include other European sites.

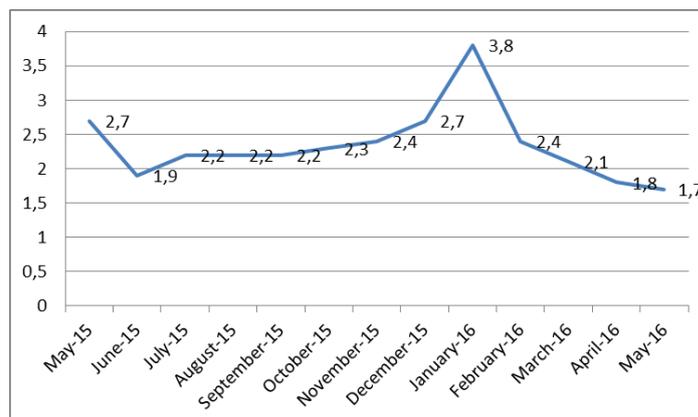
#### The new process brings several benefits:

- Immediate shipping, lowering the inventory at production site level
- Accelerated flows in order to be closer to the customer
- Optimized teamwork and increased efficiency thanks to daily full trucks at fixed times and regular frequencies
- Truck Occupancy Rate (TOR) optimization and reduction of our transport-related environmental footprint

Overall, it saves time, increases flexibility and simplifies processes for everyone along the chain.

For example, in Italy the parking time for goods prior to shipment has been decreased to 1.7 days and the TOR is now 95%.

#### Parking time for Italy (days)



### Delivery improvements

#### “North, South” French Project

We decided to deliver our products to wholesalers from our nearest distribution center in France (Marly la Ville or Saint Loubès). Historically, the two centers were distributing to wholesalers depending on the product portfolio they were handling.

The positive aspect of this new delivery is a 50% reduction in CO<sub>2</sub> emissions because the full order is delivered at once, by one center. In addition, the mean delivery distance has been reduced by 20% and the gain is offset by more frequent shipments.

#### OCP project

Instead of delivering to 46 points spread out across France, we are delivering to just one platform. For our delivery chain, this means the optimization of distances travelled and the truck occupancy rate, leading to reduced CO<sub>2</sub> emissions.

#### Deliveries within the city of Paris

Sanofi has started a new project for deliveries to pharmacy customers within Paris using Natural Gas Vehicles.



In 2017 we will launch another initiative from the Amilly center to set up a complete line of full Natural Gas Vehicles from Sanofi’s distribution centers to end customers. Inside the city of Paris we use only Natural Gas Vehicles respecting EEV norms.

*For more information about our CO<sub>2</sub> emissions, see the factsheet “CO<sub>2</sub> emissions – Scope 3” in our [Download Center](#).*