



WELCOME TO OUR WORLD

## 2017 Thalys Carbon footprint

The transportation sector is responsible for nearly one fourth of all CO<sub>2</sub> emissions in Europe. Whether public or private, individual or collective, or for people or goods, the sector must support international efforts to reduce CO<sub>2</sub> emissions by committing to the transition to a carbon-free economy.

Thalys has been committed to managing its carbon footprint since 2008. In 2015 it became the first European rail company to join the Science-Based Targets programme, a joint initiative of the WWF, the Global Compact (United Nations), the World Resources Institute (WRI) and the Carbon Disclosure Project (CDP). Thanks to its methodology and expertise, the programme has allowed Thalys to set itself the ambitious objective of reducing its CO<sub>2</sub> emissions per passenger by 40%. Thalys has strengthened the sustainable nature of its position in mass transit by implementing an approach which is compatible with the goal set at COP 21 of limiting global warming to two degrees by the end of the century.

It is important to accurately understand impacts to be able to take action. Over the last 10 years, Thalys has consistently updated its carbon footprint for all of its activities, with the assistance of the [EcoRes](#) research firm. The GHG emissions specifically linked to "Traction" (83% of total emissions) were reviewed by PwC, within the framework of the CSR data audit of Groupe SNCF.

### 2017 highlights

- Since 1 January 2017, all of the trains running in the Netherlands use electricity generated from wind.
- The Dutch line between Paris and Amsterdam has proven its dynamism. As of April 2017, Thalys has added a train and expanded capacity to respond to demand, bringing the daily frequency of trains between France and the Netherlands to ten.
- Thalys has moved its Brussels headquarters to a new building in Brussels which is closer to the Gare du Midi, at the heart of its network. The requirements for sustainable development were integrated into the project since its inception.
- IZY has reaffirmed its status as an alternative to cars and coaches for travel between Paris and Brussels. Of the 400,000 passengers this year, nearly 280,000 were new train passengers! The offering was also redesigned in 2017 with expanded capacity for weekends and holiday periods and double-decker train service to adjust costs and solidify the offering.
- Furthermore, Thalys revamped its offering in December and is now providing three categories (Standard, Comfort and Premium) which allows it to improve the occupancy rates of its trains.

## 1. METHODOLOGY

The results of the previous year are challenged annually in view of new scientific knowledge which can lead to differences in the series published each year. This is the most objective method available for reporting the trajectory.

In 2017, changes in the French<sup>1</sup> implementation decree and the UIC's best practices led us to modify the methodology to express our emissions in CO<sub>2</sub>eq rather than in CO<sub>2</sub><sup>2</sup>.

## 2. "TRACTION" CO<sub>2</sub> EMISSIONS PER PASSENGER

Comparisons between different means of transportation are made based on energy consumption per passenger-km. This includes:

- The energy used to move Thalys trains (including lighting, air conditioning and heating);
- The energy required to move equipment (empty train movements to adjust to equipment requirements).

The emissions from "commercial" traction energy are 22,269 t of CO<sub>2</sub>eq, considering that the total mileage of the Thalys trains is 9,817,170 km<sup>34</sup>.

Thalys trains operate on the rail networks of four countries: Belgium, France, the Netherlands and Germany. For each of these, a CO<sub>2</sub> emissions factor is taken into account for electricity (WTW: Well-to-Wheel<sup>5</sup>):

- **Belgium: 0.168 kg CO<sub>2</sub>/kWh**  
WTT: 0.029 kg CO<sub>2</sub>/kWh, source: EcoTransit  
TTW: 0.139 kg CO<sub>2</sub>/kWh, source: FEBEG
- **France: 0.048 kg CO<sub>2</sub> eq /kWh**  
WTT: 0.048 kg CO<sub>2</sub> eq /kWh, source: Order of 26 April 2017 implementing decree n° 2017-639 of 26 April 2017 relating to information on the quantity of greenhouse gases emitted by transport services.  
TTW: 0 kg eq CO<sub>2</sub>/kWh Order of 26 April 2017 implementing decree n° 2017-639 of 26 April 2017 relating to information on the quantity of greenhouse gases emitted by transport services.  
Note: the emissions factors for France are expressed in CO<sub>2</sub> equivalent.
- **The Netherlands: 0 kg CO<sub>2</sub> eq /kWh**  
WTT and TTW: 0 kg CO<sub>2</sub> eq /kWh, Source: <https://co2emissiefactoren.nl/lijst-emissiefactoren/#elektriciteit>
- **Germany: 0.518 kg CO<sub>2</sub> eq /kWh**  
WTW: 0.581 kg CO<sub>2</sub> eq, source: UIC calculations are made using the ESRS (Environmental Strategy Reporting System) method with figures provided by the Sustainable Development Foundation and used by the UIC [www.uic.org/energy-and-co2-emissions#Environment-Strategy-Reporting-System-ESRS](http://www.uic.org/energy-and-co2-emissions#Environment-Strategy-Reporting-System-ESRS), well-to-wheel.

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<sup>1</sup> Decree relating to the Order of 26 April 2017 implementing decree n° 2017-639 of 26 April 2017 relating to information on the quantity of greenhouse gases emitted by transport services.

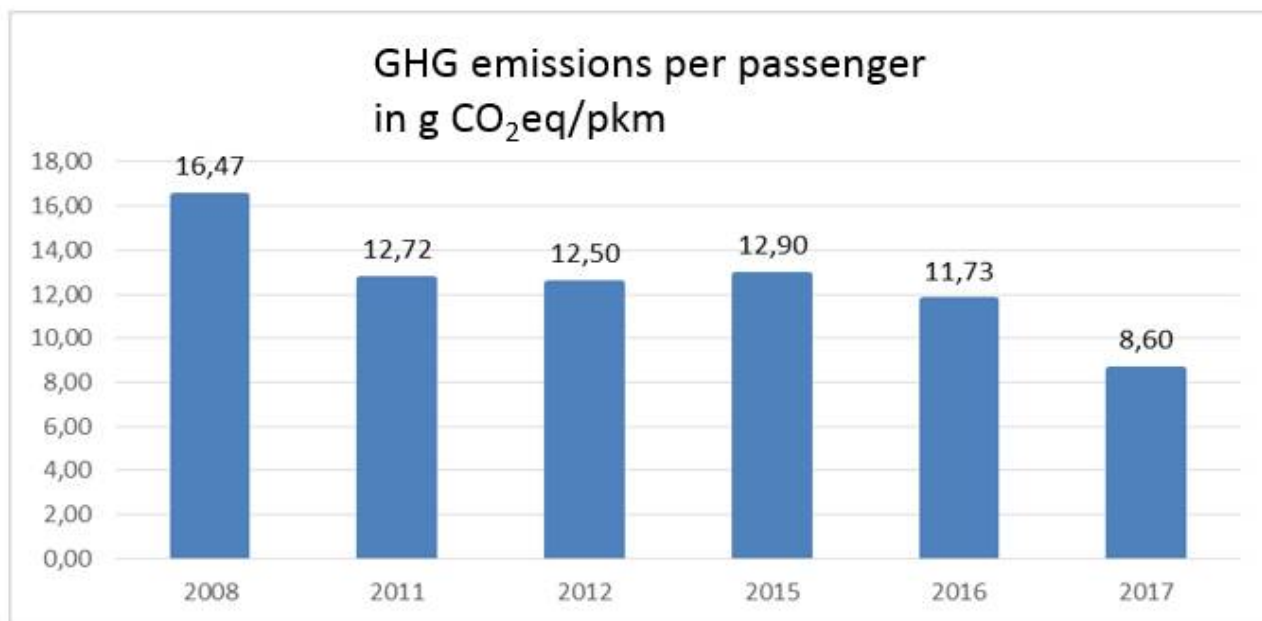
<sup>2</sup> When expressed in CO<sub>2</sub>, only this greenhouse gas is counted. When expressed in CO<sub>2</sub>eq (carbon dioxide equivalent), other gases are taken into account (methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O) and halogenated hydrocarbons).

<sup>3</sup> The theoretical value is used because total distances were assessed based on the transport plan.

<sup>4</sup> Veh-km (vehicle-kilometre) is the distance travelled by all trains (for example: two Thalys trains travel 100 km each for a total of 200 veh-km).

<sup>5</sup> <https://ec.europa.eu/jrc/en/jec/activities/wtw>

Considering the total distance travelled by passengers on the Thalys network , emissions on a per-passenger basis were **8.6 g CO<sub>2</sub>eq/pkm**.



By multiplying the emissions factor by the distance travelled for each journey concerned, we get the CO<sub>2</sub> emissions reference figure, per passenger and per journey. This result therefore represents the entirety of Thalys's activity and not only the journey completed.

CO<sub>2</sub>eq information is disclosed to passengers, before their purchase, when searching for an itinerary on the website: <http://www.thalys.com>

The methodology used by Thalys complies with the methodology guide published by the French Government for CO<sub>2</sub>eq information for transport services. The guide is available at: [https://www.ecologiquesolidaire.gouv.fr/sites/default/files/170628\\_InfoGES\\_GuideMethodo\\_vf.pdf](https://www.ecologiquesolidaire.gouv.fr/sites/default/files/170628_InfoGES_GuideMethodo_vf.pdf)

#### CO<sub>2</sub> emissions per passenger

	km	Kg CO <sub>2</sub> eq
Paris – Brussels	313	2.69
Paris Brussels IZY	361	3.10
Paris - Amsterdam	525	4.52
Paris - Cologne	537	4.62
Brussels - Amsterdam	212	1.82
Brussels - Cologne	224	1.93

### 3. 2017 THALYS CARBON FOOTPRINT RESULTS

The Carbon footprint and the [GreenHouse Gas Protocol](#) (GHG Protocol) were developed in partnership with companies, NGOs and governments to create a common accounting and reporting framework. The GHG Protocol is currently the most-used method internationally.

The main goal of these methods is to assess and classify the weight of greenhouse gas (GHG) emissions to reach practical conclusions and find strategies for improvement. These methods allow for the conversion of

so-called "activity" physical data (energy consumption, materials use and transportation, etc.) into GHG emissions using emissions factors. GHG emissions are expressed in tonnes of CO<sub>2</sub> equivalent.

The operational scope of greenhouse gases is broken down as follows:

- **Scope 1:** direct emissions linked to the burning of fossil fuel resources owned or controlled by the company.
- **Scope 2:** indirect emissions linked to electricity purchases or production.
- **Scope 3:** all other indirect emissions from the extended supply chain to the transportation of goods and people. This accounts for most of the emissions of the vast majority of companies.

The table below shows the emissions which relate to our commitment to Science Based Targets, that is, those relating to our head office, communications, passengers services and train power. In addition to this measurable commitment, we have also made a commitment to quality by supporting our maintenance workshops through an eco-responsible initiative.

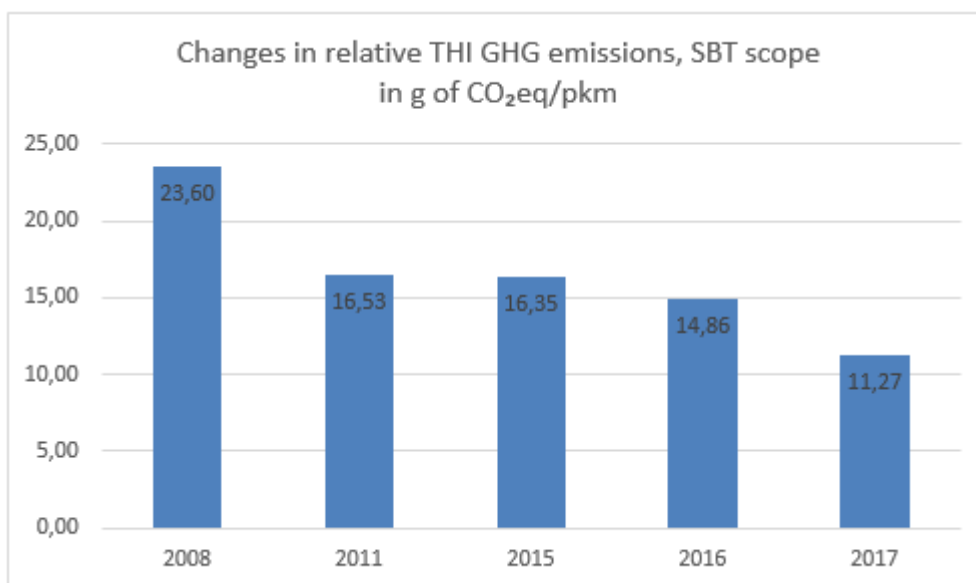
During 2017, Thalys' activity resulted in the emission of 29,190 tonnes of CO<sub>2</sub>eq, i.e. an absolute reduction of 25,111 tonnes of CO<sub>2</sub>eq compared to 2008.

t CO <sub>2</sub> eq	2008	2011	2015	2016	2017
Head office	538	471	545	571	586
Communication	682	585	100	49	36
Passenger services	11,259	4,883	4,444	3,947	4,055
Traction	41,788	34,492	33,744	30,907	24,347 <sup>6</sup>
Annex buildings	34	34	170	170	166
Total	54,301	40,465	38,869	35,644	29,190
Changes		-25.5%	-28.4%	-34.6%	-46.4%

<sup>6</sup> This total is different from the one for pulling traction only. Power line losses are taken into account in this case.

Thalys' commitment to Science Based Targets is relative, i.e. reported by passenger-km (pkm)<sup>7</sup>.

Emissions continue to decrease and the drop currently corresponds to approximately 52 points compared to our commitment of 40 points.



#### 4. MAJOR LESSONS

The carbon footprint analysis confirms that Thalys is providing transport services which help in the fight against climate change. The main reduction areas are:

##### Head office and premises

The company is committed to reducing the CO<sub>2</sub> emissions linked to its headquarters by using 100% renewable sources of electricity, through the free distribution of local and seasonal fruits, the distribution of reusable bottles rather than plastic bottles and the recycling of materials and waste. Thalys moved in 2017. Energy and environmental criteria were the focus of concerns from the beginning of the planning stage of the new offices. For 2017, we had an increase in this item due to both residences being accounted for during the construction period.

##### Energy & transport

As a full-fledged rail company, Thalys is serious about its responsibility to optimise the energy mix it uses for its trains. In addition, all train drivers must take a special eco-driving training course. The company also intends to reduce the consumption of auxiliary equipment (heating, air conditioning, lighting, etc.) and participates in discussions on the composition of the mix of electric traction power in collaboration with its partners and suppliers.

<sup>7</sup> pkm (passenger-kilometre): this is the distance travelled by all passengers (for example: two passengers travel 100 km each for a total of 200 pkm).

## On-board dining

Menus consist primarily of fresh, seasonal, organic and local products. In addition, Thalys favours the use of certified sustainable fish, from species which are not endangered. The use of red meat is limited and vegetarian offerings have been expanded. Thalys has also reduced emissions linked to on-board dining services by 50% since 2008 and is capitalising on these results.

## Occupancy rate

Emissions are calculated according to the level of network use, that is, emissions per passenger based on their journey. In 2017, more than 7 million passengers chose Thalys for the first time. We adjust our offers and services to optimise our occupancy rate and thereby limit emissions per pkm.

### 5. Avoided emissions

Another way of looking at Thalys' contribution to European mobility is to consider the CO<sub>2</sub> emissions avoided thanks to its activities. If Thalys didn't exist, travellers would have to use more polluting means of transportation such as cars or aeroplanes. Traction side emissions would total 183,000 tonnes of CO<sub>2</sub>eq per year.<sup>8</sup> This means that for each tonne of CO<sub>2</sub> emissions from Thalys, 7 tonnes, which would have been emitted by other means of transportation, are avoided.

Our efforts to encourage a modal shift and optimise the use of our trains are means to develop our economic activity and make a contribution to limiting emissions in the transport industry overall.

### 6. COMPARISON WITH OTHER MEANS OF TRANSPORTATION

- Car emissions

Average car emissions in France <sup>9</sup>	Average number of passengers per car (urban) <sup>10</sup>	Emissions from a passenger travelling 1 km
213 g CO <sub>2</sub> eq/km	2.3 CO <sub>2</sub> eq/km	92 g CO <sub>2</sub> eq

By multiplying the emissions factor by the distance travelled for each journey in question, we obtain the reference CO<sub>2</sub> figure per passenger and per journey (see table below).

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<sup>8</sup> [Sustainable Mobility](#) Carbone 4, update on avoided emissions in 2018

<sup>9</sup> CO<sub>2</sub>eq emissions for an average car in France: ADEME – <http://www.bilans-ges.ademe.fr/>

<sup>10</sup> Occupancy rate for private vehicles: STIF and DRIEA - "Enquête Globale Transport en Île-de-France", 2010; CGDD - "la mobilité des français, panorama issu de l'Enquête nationale transport", 2010

- **Aeroplane emissions**

The methodology guide recommends use of the DGAC website: (<http://eco-calculateur.aviation-civile.gouv.fr/>) to calculate the emissions for a passenger on specific flight.

For destinations which are not represented in this guide, the emissions for a passenger travelling 1 km in a 150-seat aeroplane flying less than 1,000 km are:

<b>Emissions per passenger travelling 1 km</b> Flights of less than 1,000 km <sup>11</sup>
314 g CO <sub>2</sub> /km

<b>Emissions per passenger</b>	<b>Thalys</b>	<b>Car</b>	<b>Aeroplane</b>
	<b>kg CO<sub>2</sub>e</b>	<b>kg CO<sub>2</sub>e</b>	<b>kg CO<sub>2</sub></b>
<b>Paris - Brussels</b>	2.69	28,06	89,00
<b>Paris Brussels Izy</b>	3.10	28,06	89,00
<b>Paris - Amsterdam</b>	4.52	46,92	66,00
<b>Paris - Cologne</b>	4.62	44,44	87,00
<b>Brussels - Amsterdam</b>	1.82	19,41	n/a
<b>Brussels - Cologne</b>	1.93	19,50	n/a

<sup>11</sup> Source: **ADEME** (Base Carbone), Aeroplane (passengers)