Lyria

Lyria commits to an environmental initiative

1.

Lyria's "Bilan Carbone™" carbon footprint assessment

What is the Bilan Carbone™?

It involves calculating all the greenhouse gas emissions caused by an activity in order to reduce them.

BILAN CARBONE®

+ Why did Lyria want to measure its carbon foot print using the Bilan Carbone™ methodology?

Aware of the company's responsibility towards its customers, citizens and the planet, Lyria wanted to commit to a structured environmental approach. Faced with the challenge of global warming, we believe that we, as a transport company, have a major role to play in the global effort that mankind must undertake to reduce its greenhouse gas emissions. We chose to initiate this approach by measuring the carbon footprint of our activity using the Bilan Carbone™ methodology.

+ The approach chosen:

To ensure the reliability of the study, we called on the ADEME (the French Environment and Energy Management Agency), who developed the Bilan Carbone™ methodology, and during execution of the assessment, we received advice and assistance from consultants at the ECO2 Initiative services and consulting firm.

www.eco2initiative.com

+ The scope of the evaluation:

We chose to take into account all of the emissions generated both directly and indirectly by our activity by applying the global approach defined by the ADEME. That way, not only did we evaluate the energy consumed in transporting our customers, we also evaluated all the emissions caused by the construction and maintenance of the infrastructures and trains (tracks, catenary systems, stations, TGV high-speed trains). The assessment also took into account the emissions caused by people travelling to and from the stations.

The results of the Bilan Carbone™ for Lyria for 2006

The study results show that the main sources of emissions of a transport company like Lyria are as follows:

- Emissions due to passengers' journeys to and from the station **(42% of the emissions)**
- The manufacture and maintenance of the trains and tracks **(32% of the emissions)**
- The energy consumed in maintaining the trains and stations: heating, electricity, etc. **(10% of the emissions)**
- The electricity consumption of the trains **(13% of the emissions)**

+ The results of the Bilan Carbone™ for Lyria per passenger and per kilometre:

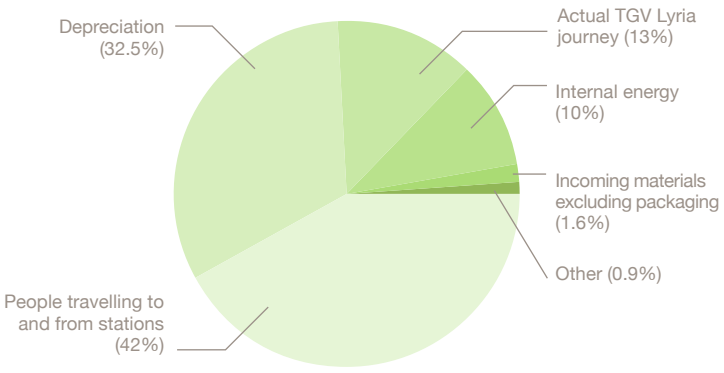
Calculated per passenger and per kilometre, the Bilan Carbone™ equates to a total of 22g of CO2. However, when evaluating this emission factor and comparing it to other modes of transport, it makes sense not to factor in the emissions produced by passengers travelling to and from stations and also not to take into account those produced by railway line construction (since emissions produced when building roads for cars are not included).

Therefore, calculated per passenger and per kilometre (excluding their journeys to and from the station and excluding infrastructures), these emissions amount to 6g of CO2 per km travelled per passenger.

This means that each kilometre travelled by a passenger causes a total of 6g of CO2, compared with 170g of CO2 emitted by an average petrol car (6 HP) or 293g of CO2 emitted by an economy-class passenger on board a short-haul flight. Therefore, the emissions for a flight from Paris to Geneva are equivalent to 22 journeys with TGV Lyria.

Note: The majority of comparisons only take into account the emissions caused by the traction energy in order to compare the emissions of different energy sources. But for the truest picture, the comparison should also include the emissions caused by the construction and maintenance of the route infrastructures. Also, our calculator only takes into account the emissions associated with the electricity consumption of TGV Lyria during the actual journey.

Lyria's Bilan Carbone™	CO2 emissions (in tons)	% of total
People travelling to and from stations	15,476	42%
Depreciation	11,997	32.5%
Actual TGV Lyria journey	4,878	13%
Internal energy	3,742	10%
Incoming materials excluding packaging	598	1.6%
Other	332	0.9%
TOTAL	37,023	100%



The conclusions & lines of action identified

In consultation with the ADEME, Lyria decided:

- To put a **calculator** on its website to raise customer awareness about the emissions of various modes of transport.
- To sell tickets for **public transport** services on its trains.
- To discuss offering **eco-friendly** means of transportation in partnership with vehicle rental agencies or providers of public transport.

+ Passenger transport:

The Bilan Carbone™ study showed that the electricity consumption of TGV Lyria ultimately represents a fairly low share of the balance of emissions of this type of transport and that a passenger who travels 10km by car to get to the station emits as much as the train does on the whole journey from Paris to Geneva (550km).

Of course, Lyria cannot make decisions for its customers as to which modes of transport they should use, especially since in many cases the car is a necessity (to carry luggage, for example, or transport children or people with reduced mobility, or due to an insufficient public transport network, etc.).

However, in certain cases, it is possible to use cleaner transport and Lyria intends to play its part in raising customer awareness and facilitating access to alternative means of transportation.

+ Other sources of energy consumption:

With respect to sources of energy consumption (energy for maintenance, heating and electricity for stations, energy consumption by trains), Lyria is closely monitoring the progress of the SNCF (French National Railway Company) whose TGV high-speed trains and railway infrastructures it uses, and of the CFF (Swiss Federal Railways), the RFF (the company that owns and maintains the French national railway network) and Alstom, who builds TGV high-speed trains.

2.
Example: the high-speed Paris < > East line

The new high-speed Paris < > East line, which has been in service since June 2007, has made significant progress in terms of reducing greenhouse gas emissions.

+ The East European Technicentre, a latest-generation workshop:

All site activities are undertaken with the greatest respect for the environment: the SNCF has now introduced an HQE (High Quality Environmental) standard for its workshops from the design stage onwards and is hoping to obtain ISO 14 001 certification in the near future. This is the SNCF's way of implementing an effective environmental management system that will control the impact of its workshop activities on the environment, while committing to continuous improvement at the same time.

+ The new TGV Paris < > East stations:

The 21 city-centre stations of the TGV Paris < > East network are currently benefiting from extensive renovation and development efforts, which will make it possible to optimise overall energy consumption, offer new services, facilitate journeys and access to service areas and make the stations more user-friendly.

For comparison, we have calculated the Bilan Carbone™ of this line separately.

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The conclusions & lines of action identified

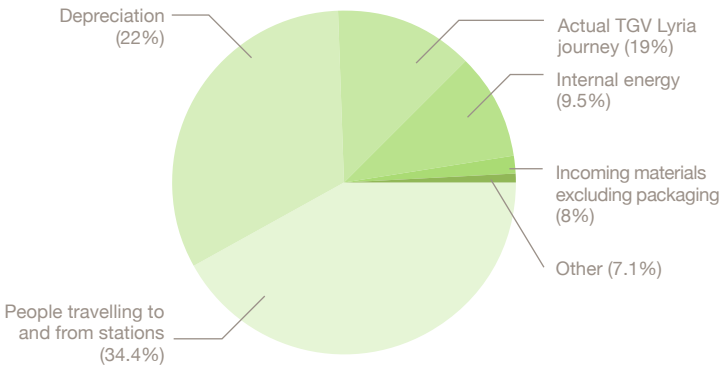
Taking into account all of the parameters of the evaluation, per passenger and per kilometre, the emission factor for the TGV Paris < > East line is 16g of CO2, i.e. 27% less than the overall emission factor (22g of CO2).

+ The ambitious goals of the SNCF and the CFF:

For their part, despite the low emissions per kilometre for trains, the SNCF and the CFF have committed to programmes aimed at reducing greenhouse gas emissions and saving energy. Numerous measures have been implemented, including, in particular, building and renovation standards for stations as well as training courses for train drivers to encourage "energy-efficient" driving.

For more information, please visit the SNCF and CFF websites:
SNCF: www.sncf.fr
CFF: http://mct.sbb.ch/mct/fr/konzern_engagement/konzern_umwelt.htm

The Bilan Carbone™ of the Paris < > East line	CO2 emissions (in tons)	% of total
People travelling to and from stations	1,386	34.4%
Depreciation	880	22%
Actual TGV Lyria journey	762	19%
Internal energy	384	9.5%
Incoming materials excluding packaging	327	8%
Other	285	7.1%
TOTAL	4,024	100%



3.
The purpose of the Bilan Carbone™

A tool for driving change.

Conducting a Bilan Carbone™ enables detailed analysis of a company's set-up and its sensitivity to "carbon risk" (price of fossil fuels, impacts of a carbon tax).

In this sense, it is a tool that should make it possible to launch innovative ideas with respect to future activities, i.e.:

- **A cross-sectional analysis of site practices:**
  outdated practices
  waste
- **An assessment of the "carbon risk":**
  effects of introducing a carbon tax
  sensitivity to the price of hydrocarbons
- **Adoption of a responsible attitude:**
  contribution to the collective effort
  raising staff awareness
  corporate image

+ Climate change: the urgent need for assessment:

The activities of mankind, whatever they are, generate greenhouse gas emissions, either directly or indirectly. Greenhouse gases caused by human activity are contributing to climate change and are constantly increasing. If we do not act quickly to reduce our emissions, the consequences for our entire planet and for future generations could be disastrous in the extreme: glacial melting, droughts, floods, displacement of populations, new diseases, extinction of species, etc.

Therefore, as individuals, companies, administrative establishments or organisations, we all now have a role to play in reducing emissions generated by our activities. To take effective action, we need to know the profiles and main characteristics of our emissions as best we can. It is with this aim in mind that the ADEME developed the Bilan Carbone™ diagnostic tool.

Find out more about climate change:
www.ademe.fr/citoyen-climat

+ The Bilan Carbone™, a methodology from the ADEME:

Developed by the ADEME, the Bilan Carbone™ is a certified methodology with national recognition in France. To perform a Bilan Carbone™, the service provider must be accredited by the ADEME. Last but not least, the study is 50% subsidised when conducted in accordance with the specifications defined by the ADEME.

Find out more about the ADEME's Bilan Carbone™:
www.ademe.fr/bilan-carbone

Find out more about Lyria's Bilan Carbone™:
www.tgv-lyria.com