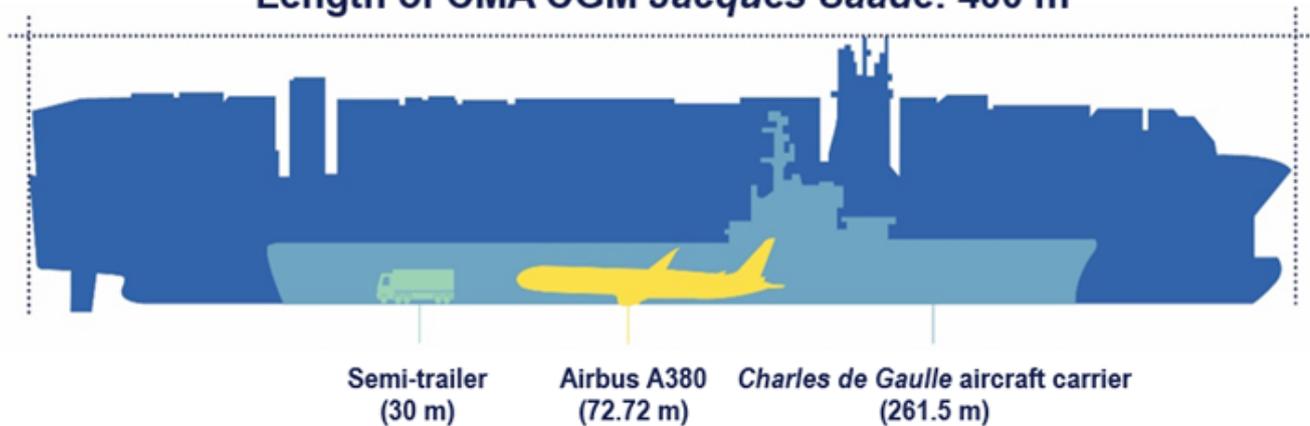


Exercise 3 Level 3

Length of CMA CGM Jacques Saadé: 400 m



Heavy-Weight Category: Container Ships!

Container ships are the largest form of transportation in the world. The image above shows the size of the world's biggest container ship, the Jacques Saadé, compared with a semi-trailer, an airliner and a military aircraft carrier.

Typically powered by heavy fuel oil, these giants of the sea emit dangerous particles, such as sulfur and nitrogen oxides. The gradual switch to liquefied natural gas (LNG) as fuel should considerably mitigate this problem. But the question remains: Are container ships also "monsters" in terms of CO₂ emissions when measured against other means of freight transportation?

To compare them with the many options available, we have to look at emissions per "ton-kilometer" (how much CO₂ is emitted when moving a metric ton one kilometer).

A giant container ship^[1] emits around 3 grams (g) of CO₂ per ton-kilometer. If it is carrying a load of 200,000 metric tons, it will therefore emit 600 kg of CO₂ per km.

A 40-ton container semi-trailer, common on European roads, produces more than 90 g of CO₂ per ton-kilometer. The 40-ton vehicle will therefore emit 3.6 kg of CO₂ per km.

By way of comparison, rail transportation emits between 1.5 g and 35 g of CO₂ per ton-kilometer (depending on the energy source used) and air transportation between 670 g and 3,000 g per ton-kilometer (depending on flight conditions).

Question

Between a container ship and a truck, which produces the least CO₂ relative to the load being transported ?

Answer

the giant container ship.

Transporting the 200,000 metric tons of product that can be packed onto a container ship would require a huge convoy of 5,000 trucks. A container ship with a load this size would emit 600 kg of CO₂ per kilometer, whereas 5,000 trucks would emit 18 metric tons. However, it's important to remember that the two means of transportation (sea and land) are not interchangeable, meaning they both typically need to be used.

1] Using the example of the Antoine de Saint Exupery (GGA-CME).