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The Port of Barcelona is making progress towards introducing cleaner fuels for ships

- **The 618 port calls of LNG-powered ships during 2023 made it possible to reduce NO_x emissions by 10% out of the total port calls.**
- **The Port of Barcelona is planning to build zero-emission fuel production plants at its facilities.**

During 2023 the Port of Barcelona performed a total of 199 liquefied natural gas (LNG) bunkering operations to ships, for a total of 143,000 m³, which is twice that of the last reference year - 2021 - when it supplied 65,000 m³ of LNG. This growth is a reflection of the port's commitment to this transitional fuel, which has consolidated its role as the best solution in the short and medium term for reducing the environmental impact of port activity and maritime transport.

After continued growth in LNG bunkering to ships since 2017, the increase in prices caused by the war in Ukraine substantially reduced the use of this fuel in 2022. The normalisation of prices, and the commissioning of a bunkering barge based in Barcelona called the Haugesund Knutsen, has significantly increased LNG bunkering operations, particularly ship-to-ship operations, which tripled in comparison to 2021.

This increase has meant that the percentage of LNG bunkered to ships with respect to total fuels (mainly fuel oil and diesel fuel) at the Port of Barcelona rose from 0.2% in 2021 to 5.8% last year.

The 143,000 m³ of LNG supplied to ships during the past year places Barcelona among the leading ports in Europe in the use of this fuel. The port's commitment to promoting cleaner fuels such as LNG, and the various initiatives included in its Energy Transition Plan; the commissioning of an LNG bunkering barge with a permanent base in Barcelona; and the changes that the maritime industry is incorporating to reduce its environmental impact are the main reasons for its positioning.

The commissioning in February 2023 of the 5000 m³ capacity Haugesund Knutsen from the Knutsen Scale Gas company, commercially managed by Shell, made it possible to significantly increase bunkering services to vessels, specifically Carnival group cruise ships. The presence of a bunkering barge based in the port has greatly increased operational flexibility and has helped to substantially reduce service costs. During 2023, 127,500 m³ of LNG was supplied and 66

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operations performed to bunker fuel to cruise ships from the barge, a figure much higher than the 18 operations of 2021 and the 14 performed in 2022.

Once LNG prices returned to normal, the Baleària shipping company resumed supplying this fuel to its ships operating in Barcelona using tankers from the ESK company. Baleària performed 133 operations and supplied 15,500 m³ of LNG during 2023.

The first LNG bunkering operation on a cargo ship was also performed, specifically on a vehicle carrier, at the end of 2023. In addition to cruise and ferry companies, shipping companies are bringing LNG-powered container and vehicle ships into service along with bulk cargo ships transporting grain or chemicals. The Port of Barcelona receives regular calls from these ships, including some of the largest in the world, such as the 400 metre-long, 61 metre-wide CMA CGM Palais Royal container ship, which has a capacity for 23,000 TEU (20-foot container units), which made the first call at the BEST Container Terminal on 19 December.

Of the 8,783 port calls of ships arriving at the Port of Barcelona in 2023, 618 vessels were powered by LNG (7%), twice as many as in 2022. These 618 LNG calls have spelt a reduction of approximately 400 tonnes of NO_x, which represents a 10% reduction in NO_x emissions out of the total number of calls in 2023. LNG-powered vessels that stopped at port over the past year produced 92.6% fewer NO_x emissions than if they had been running on diesel fuel.

The commitment by shipping companies to LNG as a transition fuel to reduce CO₂ emissions from the logistics chain is progressing in lockstep with the increase in bunkering services in Barcelona. As a result, several LNG bunkering companies have expressed an interest in locating at the Port. The high degree of diversification of Barcelona, with its terminals serving cruise ships, ferries, containers, vehicles, bulk, etc.; the commitment to LNG by several shipping companies that operate there regularly; easy access to this fuel thanks to the Enagas regasification plant; and the policy of fee discounts for vessels using this fuel, applied since 2015 to encourage the most sustainable ships to call at the port all form the basis for an increase in the short term in LNG bunkering operations and in the types of vessels that will bunker at the Port of Barcelona.

Energy Transition Plan

Using LNG as a fuel to ease the transition towards zero-emission fuels is part of the Port of Barcelona's Energy Transition Plan, which studies the various different ways to decarbonise port activity. The Port's Fourth Strategic Plan sets the goal of halving greenhouse gas emissions by 2030 and becoming an emissions-neutral port by 2050.

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The Energy Transition Plan includes the Nexigen project to connect ships to the general electricity grid while they are berthed; generating electricity with solar panels in port facilities to achieve maximum energy self-sufficiency; and fostering the use of new fuels.

In the chapter on fuels, it specifies that LNG is the cleanest fuel of choice as a preliminary step towards zero-emission fuels, such as bioLNG, methanol, ammonia, hydrogen or biofuels, to decarbonise maritime and land transport operating at the Port of Barcelona.

The Energy Transition Plan, designed in collaboration with Barcelona Port Authority and the shipping companies, envisages reserving port spaces dedicated to producing green fuels and renewable energies. The short-term plan is to build a green methanol production plant with priority use as a zero-emissions fuel for ships. There is also a feasibility study underway to build a biomethane production plant using waste within the facilities of the Port of Barcelona. Biomethane, which is a carbon-neutral fuel, will replace LNG for ship propulsion.

LNG, the European Union's transition fuel

Under the European Green Deal and the Fit for 55 legislative strategy, the European Union (EU) has established that, although it is a fossil fuel, LNG is a transitional fuel that considerably reduces pollutants and CO2 emissions.

Depending on engine type, using LNG makes it possible to cut pollutant emissions of sulphur oxides (SOx) or particulates by 100%, nitrogen oxides (NOx) by approximately 70% and CO2 emissions by around 20%. Natural gas - with its fully developed logistics chain - is currently the only mature fuel for maritime transport and is the one that will make it possible to eliminate greenhouse gas emissions in the future through the use of bioLNG produced from organic waste, or from synthetic LNG produced from hydrogen and CO2 capture.

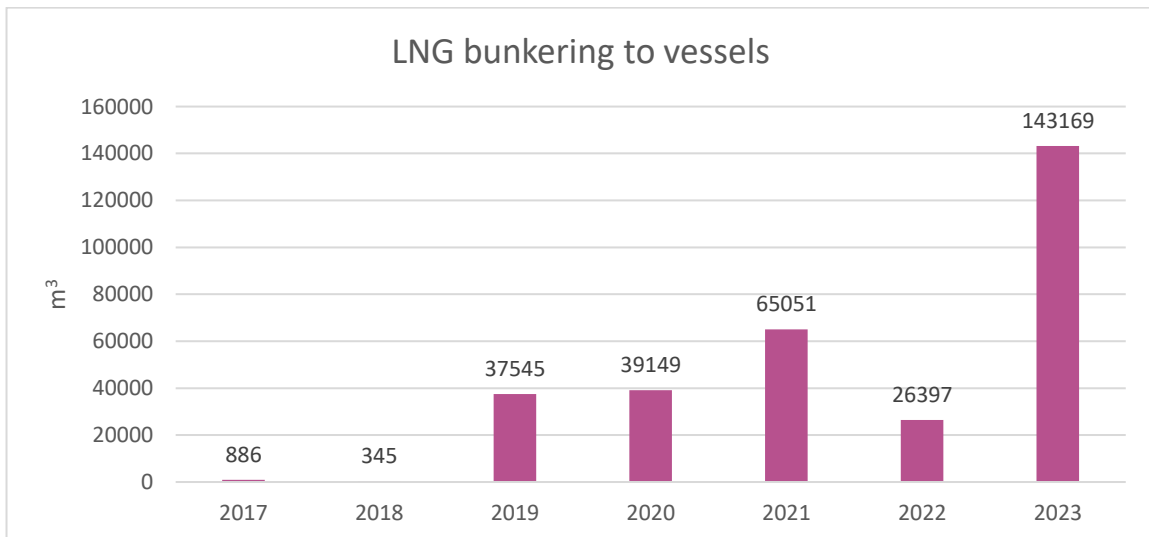
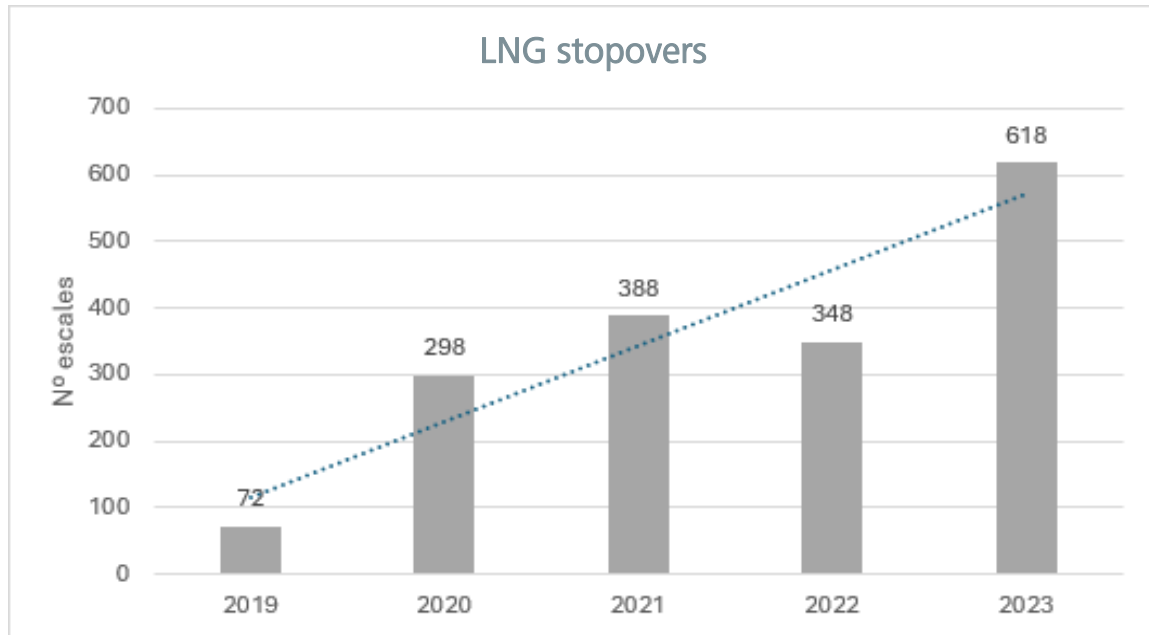
Various EU Directives and Regulations, such as the Alternative Fuels Infrastructure Regulation (AFIR), oblige the ports of the TEN-T network, like Barcelona, to have LNG bunkering infrastructures for ships. Consequently, the Port of Barcelona has been working since 2015 to enable LNG bunkering infrastructures from tankers, barges and the Enagas regasification plant, and has promoted natural gas as a fuel for ships.

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FOTOS: The Haugesund Knutsen bunkering barge during the LNG bunkering operation to the Costa Smeralda cruise ship performed today.



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The president of the Port of Barcelona during the presentation.



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