How to make decarbonization of maritime transport a success history

Green Transition for Maritime Transport

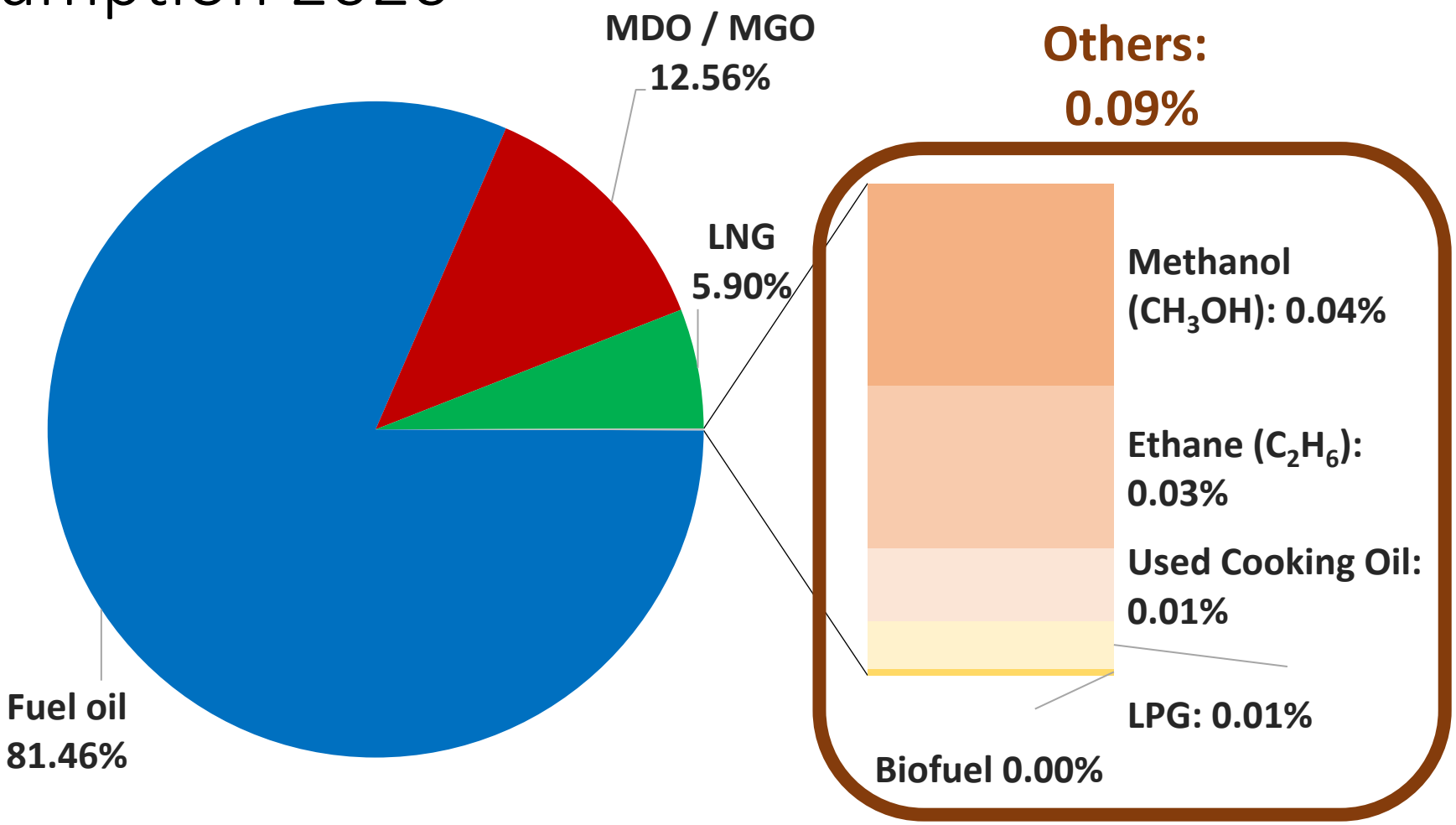
Elena Seco - Director General
Spanish Shipowners Association

Algeciras, 28 April 2022

Where do we stand today?

Ship fuel oil consumption 2020

- **99.9%** of the fuel used by ships (GT > 5,000) in 2020 were **fossil fuels**.
- Maritime transport is considered one of the **most difficult sectors to decarbonize** (along with aviation).



Source: IMO Report of fuel oil consumption data (2021)

Goal: decarbonization 2050?

- Unlike other sectors and industries on-shore, **the fuels and technologies that allow this goal to be achieved do not exist yet.**
- In the best-case scenario, it seems that by the end of this decade the sector could have some technical alternative to fossil fuels, which in any case, will depend on an even greater challenge:
  - Enough **renewable energy** to generate all those 'green' fuels that will subsequently have to be used on board;
  - A **new bunkering infrastructure** for the manufacture, supply and handling of these new fuels, as well as **training programs** and the development of **completely new safety procedures**.

Short-term solution

Advanced biofuels and e-fuels	Advanced (waste) and electrofuels (CO_2 capture)
	Minor technical adaptation
	Emissions reduction between 60% and 100% (from well to wake)
	They exist, but not in enough quantities
Liquefied Natural Gas (LNG)	**Eliminates polluting emissions**
	25% reduction in GHG emissions but methane slip ➔ net effect -9 to -20%
	400 ships already use it, plus 100 in portfolio
	Replaceable by biogas or synthetic gas

Long-term solution

H_2

☺ No GHG nor pollutant emissions (SECA).

☹ Low energy density ➔ must be liquefied (-253°C).

☹ Five times more space to store the same amount of energy.

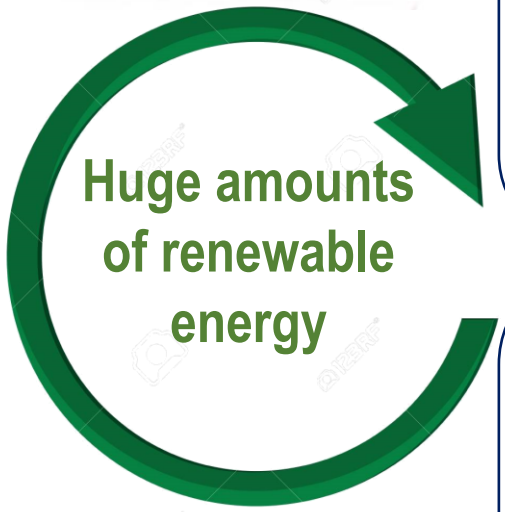
Methanol CH_3OH

☺ Commercial projects in operation since 2015.

☺ Liquid at room temperature and atmospheric pressure.

☹ Toxic ➔ additional cofferdams to avoid leaks.

☹ Double the space to store the same amount of energy.



Ammonia NH_3

☺ First engines could be available on the market in 2024

☹ Toxic.

☹ N_2O emissions (strong greenhouse effect).

☹ Double the space to store the same amount of energy.

Fuel cells and batteries

☺ Batteries: zero emissions (if electricity comes from renewable energy).

☺ Fuel cells: hydrogen used to turn its energy into electricity.

☹ Very early stage of development.

☹ Only for short distances or auxiliary energy of deep-sea vessels.

Thank you!

Any question?

Elena Seco
Spanish Shipowners Association (ANAVE)
eseco@anave.es