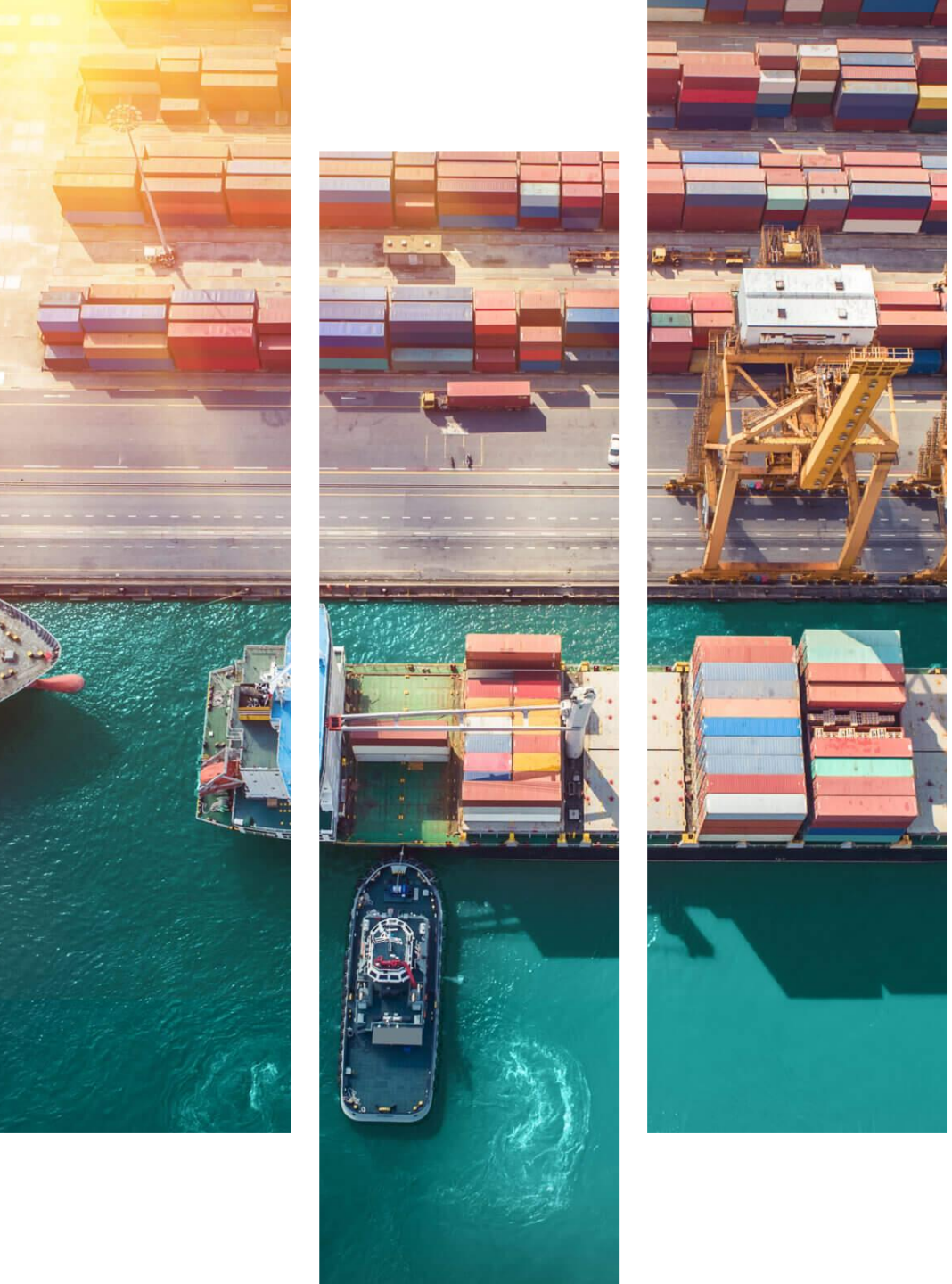
42nd PMAWCA ANNUAL COUNCIL MEETING

November 15 - November 18

Luanda - Angola

THEME

Involvement of shipowners and maritime organizations in reducing the carbon load on the environment and what options are planned for this purpose.



INTRODUTION

While maritime transport plays an essential role in the global economy and is one of the most energy-efficient modes of transport, it is also a large and growing source of greenhouse gas emissions. In 2018, global shipping emissions represented 1 076 million tonnes of CO_2, and were responsible for around 2.9% of global emissions caused by human activities.

What are the options for reduction of CO_2 Impacts?

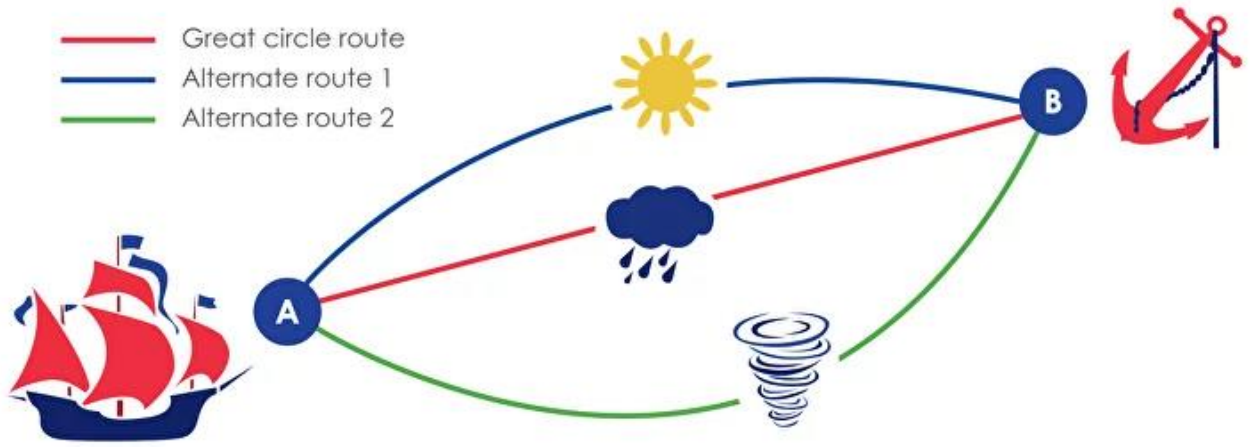
ROUTE PLANNING OPTIMIZATION

Comparing potential routes for ships:

Option 1 - a direct route - is not always ideal, it can pass through the eye of a typhoon, a storm with high waves or other unsafe places, for example, with pirates.

Option 2 is a route, bypassing severe weather conditions can lead to late and burning additional fuel.

Option 3 is a route that can involve periods of drift where the ship experiences much better weather and does not expend much fuel. Yes, the vessel may be late, but the vessel burns less bunker fuel throughout the voyage.



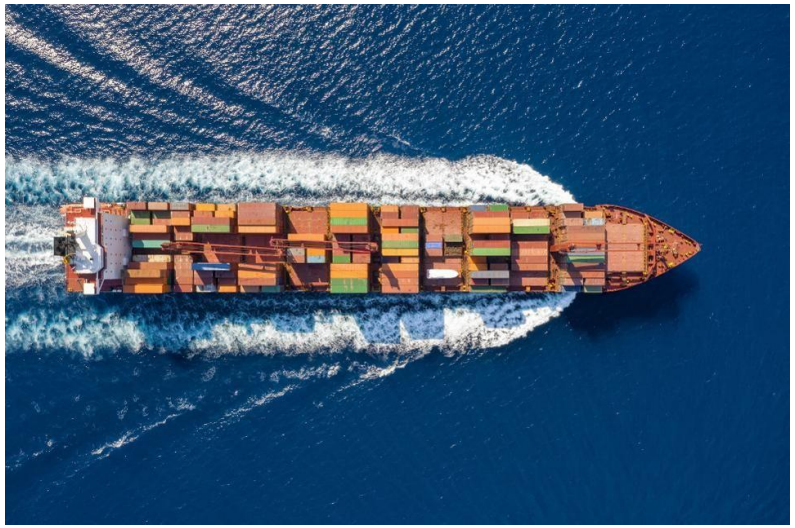
PASSAGE SPARE TIME ALLOWANCE IS A MUST!!!

SLOW STEAMING

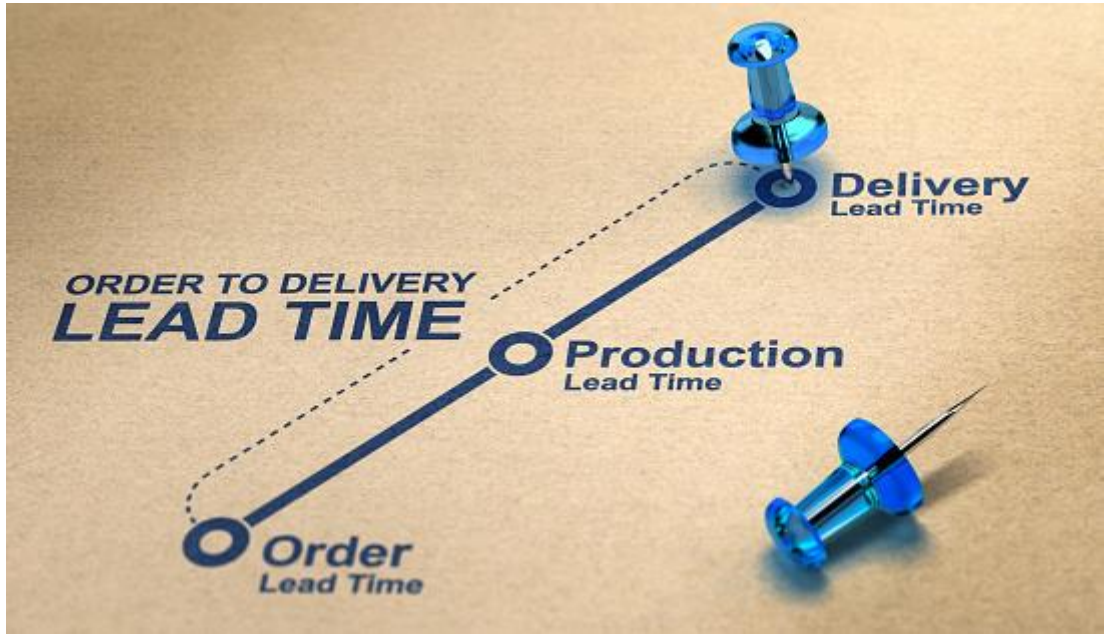
Low steaming refers to the practice whereby the (operational) speed of the ship is reduced. It basically means that the ship's engine is not used at full power, thus saving fuel, reducing CO2 and air pollutant emissions.

Reducing ship speed by 10% will lead to a 27% reduction of the ship's emissions. Overall, if all ships were to slow-steam, the available capacity on the market would be reduced (more ships would be needed to carry out the same transport work). If the additional emissions of building and operating these new ships were considered in the equation, then reducing the fleet's speed by 10% would lead to overall CO2 savings of 19%.

Reducing the (operational) speed of ships multiplies the positive effects of an energy efficiency index, as it results in burning less fuel and therefore emitting less CO2 and other greenhouse gases. It also contributes to significantly lower emissions of air pollutants such as NOx and PM, with benefits greatly outweighing costs. Slow-steaming is often regarded as the most cost-effective way to reduce CO2 emissions as it **can be done at almost no cost** while translating into operational savings.

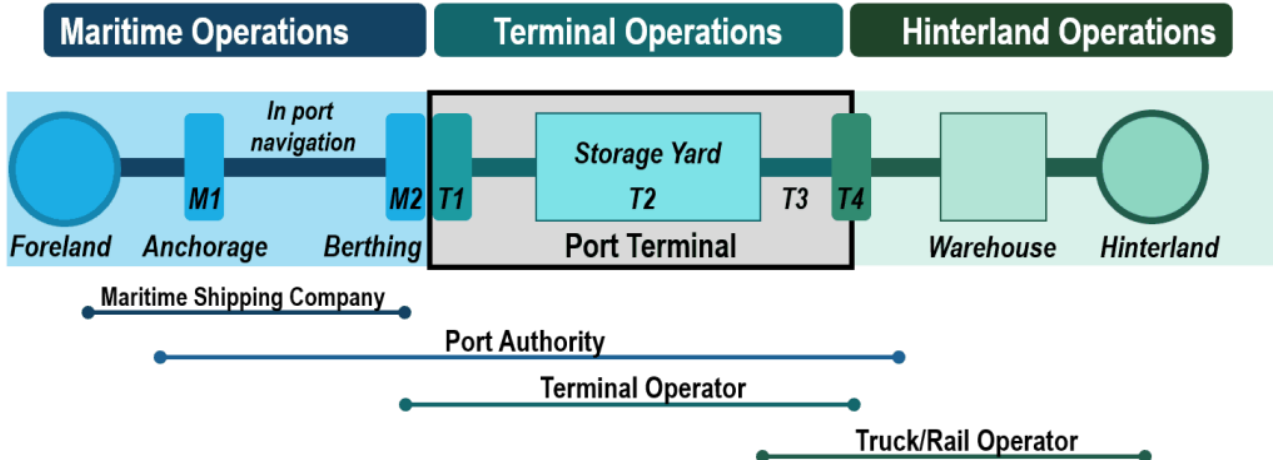


RESPECT OF LEAD TIME



EFFICIENT POT OPERATIONS

The efficiency of a port is part of a continuum that includes maritime, terminal, and hinterland operations. These dimensions are interrelated since inefficiencies in one dimension are likely to impact the others.



Key Performance Indicators

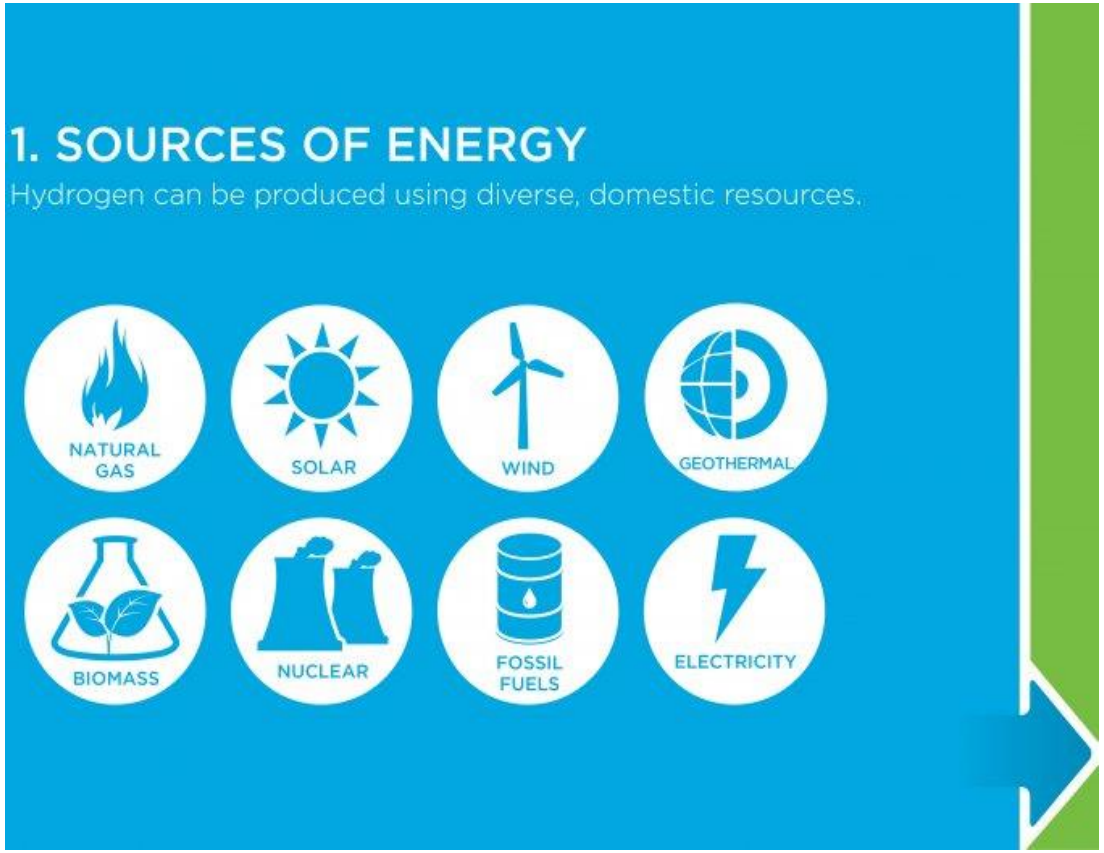
M1: Average anchorage time
M2: Average ship turnaround time
T1: Average number of crane movements per hour
T2: Average yard dwell time
T3: Average truck or railcar turnaround time
T4: Average gate waiting time (trucks)

TRANSITION TO RENEWABLES AND CLEANER SORCES OF FUEL

Hydrogen is the simplest and most abundant element on earth—it consists of only one proton and one electron. Hydrogen can store and deliver usable energy, but it doesn't typically exist by itself in nature and must be produced from compounds that contain it.

Hydrogen can be produced from diverse, domestic resources.

Currently, most hydrogen is produced from fossil fuels, specifically natural gas. Electricity—from the grid or from renewable sources such as biomass, geothermal, solar, or wind—is also currently used to produce hydrogen. In the longer term, solar energy and biomass can be used more directly to generate hydrogen as new technologies make alternative production methods cost competitive.



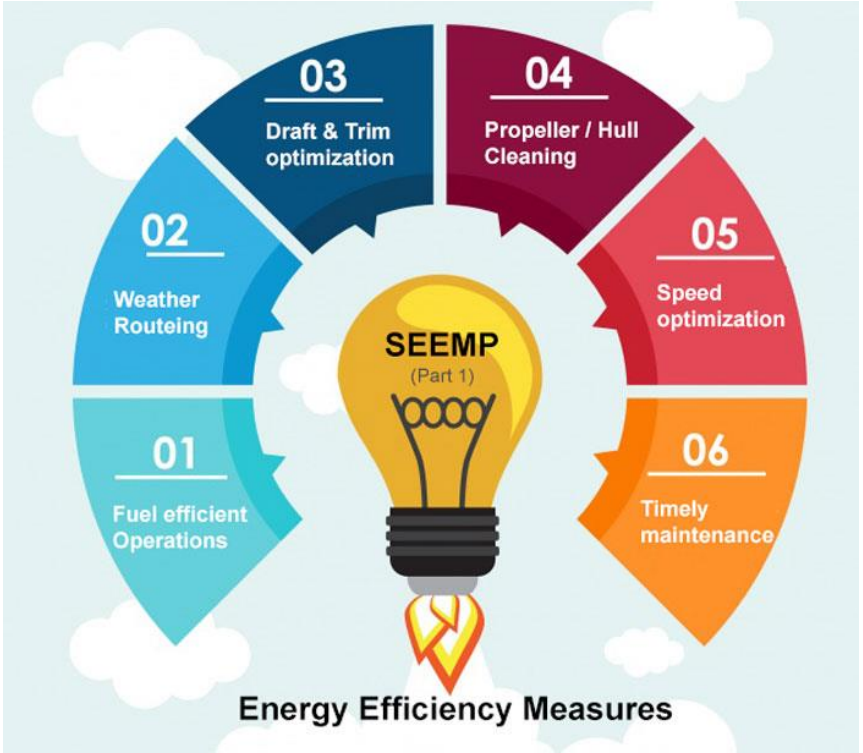
ENERGY ON BOARD SAVING

Energy efficiency is the big deal these days. If we use less energy, not only we save the energy, but we contribute towards lesser pollution too.

After all, the greenest energy is the energy you do not have to produce.

For a very long time, ship energy efficiency was voluntary and ship owners were expected to understand their responsibility towards energy efficiency.

However, IMO felt a need to make the concept of “energy efficiency” as mandatory and thus the Annex VI of the MARPOL was amended to include chapter IV for ship energy efficiency.



BATTERY TECHNOLOGY ADOPTION

Ocean-going vessels going on full electric propulsion may still not be a foreseeable scenario at least in the near future. However, there's no denying that shipping has an eye on a battery-powered future, attested by an increasing interest in the development of electric vessels.

Battery-powered vessels have made "astonishing" market penetration, from almost zero in 2010 to 364 today in operation or under construction

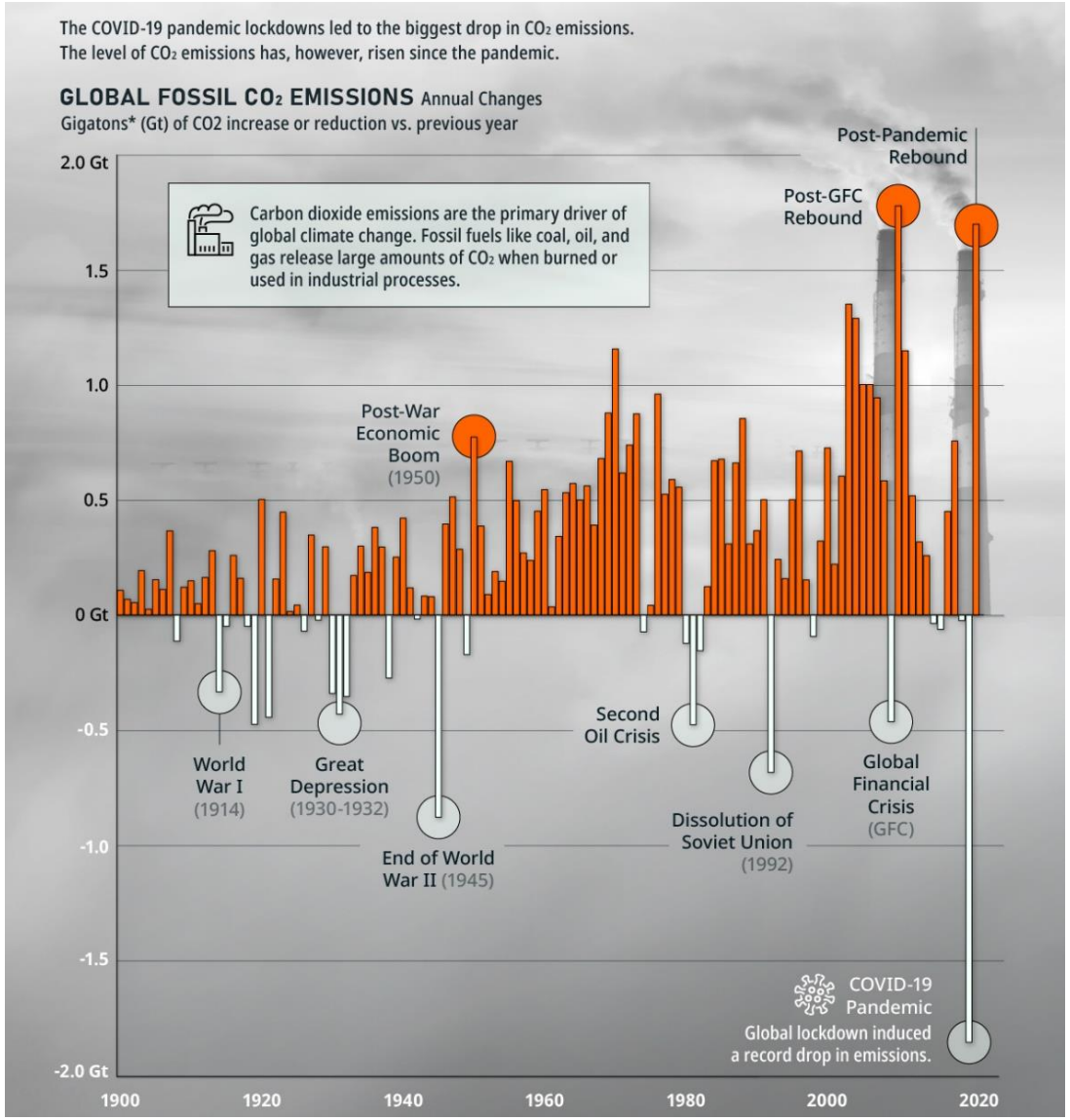
By 2050, IMO requires a 50% reduction in total annual GHG emissions compared to 2008 levels, in addition to encouraging further efforts to phase out GHG emissions completely.

CO_2 EMISSIONS SINCE 1900

The Infographic shows:

Global Fossil CO_2 Emissions Annual Changes Gigatons (Gt) increase or reduction vs previous years

- The COVID-19 pandemic lockdown led to the biggest drop in CO_2 emissions.
- The level of CO_2 emission has, however, risen since the pandemic

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