

GREEN SHIPPING



What is Green Shipping?



Green shipping refers to the use of resources and energy to transport people and goods by ships and specifically concerns the reduction in such resources and energy in order to preserve the global environment from GHGs and environmental pollutants generated by ships.

The background of the slide features a row of white wind turbines on a grassy hill. The turbines are arranged in a line that recedes into the distance towards the right. The sky is a clear, bright blue. The ocean is visible in the lower right corner, with gentle waves breaking on the shore. The overall scene is clean and represents renewable energy.

ORIGINS OF GREEN SHIPPING

Paris Agreement

The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at the UN Climate Change Conference (COP21) in Paris, France, on 12 December 2015. It entered into force on 4 November 2016.

The Paris Agreement was a landmark in the multilateral climate change process because, for the first time, a binding agreement brings all nations together to combat climate change and adapt to its effects.

Why do we need “Green Shipping” ?

Shipping industry, which is wholly accountable for the marine and cargo transportation, is one of the potent sources for pollution at sea. With over 70% water covering our planet, marine industry is booming each passing day.

- Climate change:
 - Sea shipping contributes to climate change through emissions of Black Carbon, tiny black particles, produced by combustion of marine fuel.
 - Black carbon accounts for 21% of CO₂-equivalent emissions from ships, making it the second most important driver of shipping's climate impacts after carbon dioxide.
 - An IMO's GHG Study in 2014 estimated that for the period 2007-2012, shipping emitted about 1,000 Mt CO₂ per year, equaling approximately 3.1% of annual global CO₂ emissions.



- Air pollution:

- Poor air quality due to international shipping accounts for approximately 400,000 premature deaths per year worldwide.

- Sulphur oxides are harmful to human health, causing respiratory, cardiovascular and lung disease. Once released in the atmosphere, SO_x can lead to acid rain, which impacts crops, forests and aquatic species and contributes to the acidification of the oceans.

- In addition to the particles directly emitted by ships such as black carbon, these secondary particles increase the health impacts of shipping pollution. Tiny airborne particles are linked to premature deaths. The particles get into the lungs and are small enough to pass through tissues and enter the blood. They can then trigger inflammations which eventually cause heart and lung failures.



• Ocean pollution from oil spills:

- While less frequent than the pollution that occurs from daily operations, oil spills have devastating effects.
- Marine species constantly exposed to PAHs (Polycyclic aromatic hydrocarbons, the components in crude oil) can exhibit developmental problems, susceptibility to disease, and abnormal reproductive cycles.
- One of the more widely known spills was the Exxon Valdez incident in Alaska. The ship ran aground and dumped a massive amount of oil into the ocean in March 1989. Despite efforts of scientists, managers and volunteers, over 400,000 seabirds, about 1,000 sea otters, and immense numbers of fish were killed.
- Torrey Canyon, Erika and Prestige are other examples of major oil spills incident.
- In Mauritius, we had the MV Wakashio oil spill in 2020.

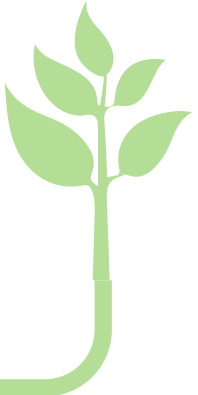
IMMEDIATE ACTIONS REQUIRED



IMO's Initial Action for “Green Shipping”

- On 1 January 2020, a new limit on the sulphur content in the fuel oil used on board ships came into force, marking a significant milestone to improve air quality, preserve the environment and protect human health.
- Known as “IMO 2020”, the rule limits the sulphur in the fuel oil used on board ships operating outside designated emission control areas to 0.50% m/m (mass by mass) - a significant reduction from the previous limit of 3.5%. Within specific designated emission control areas the limits were already stricter (0.10%).
(This new limit was made compulsory following an amendment to **Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL)**)

Source: IMO



Five beneficial changes from
IMO's **Sulphur Limit** for ships' fuel oil

Sulphur 2020



Cleaner air

77% drop in overall sulphur oxide (SOx) emissions from ships – annual reduction of approximately 8.5 million metric tonnes of SOx



Positive impacts on human health

Premature deaths, cardiovascular, respiratory and pulmonary diseases will all be reduced



Higher quality fuels

The majority of ships will switch to higher quality, low sulphur fuel oil to meet the limit.



Ship operators, owners + refineries have adapted

Guidance issued by IMO and other stakeholders to enhance preparedness ahead of the entry into force of Sulphur 2020



Changes for enforcement authorities

Flag and port State control will be making sure ships are compliant.

Source IMO

A Breath of Fresh Air

IMO 2020

Taking bold action to clean up
shipping emissions by reducing sulphur

+ HEALTH & ENVIRONMENT – THE FACTS



- More than **570,000** premature deaths avoided (2020-2025)
- **68%** overall reduction in shipping's negative effect on human health through air pollution



Significant reductions in:

- stroke
- asthma
- cardiovascular disease
- lung cancer
- pulmonary disease



Cutting sulphur emissions
helps prevent acid rain,
which means:

- **less** harm to crops, forests
and aquatic species
- **tackling** ocean acidification



WHERE?

- Health benefits felt globally
- Strongest in coastal communities
- Major impact in vulnerable areas:
Asia-Pacific, Africa and Latin America



HOW?

- 0.50%** reduced from 3.50%
– significantly less sulphur permitted in ships' fuel
- 77%** drop in overall SOx emissions from ships (2020-2025)



WHEN?

- From **1 January 2020**

#IMOSulphurLimit

#BreatheLife

#BeatAirPollution

Source: University of Delaware study, February 2018, "Health
Impacts Associated with Order of MARPOL Global Sulphur
Standards" presented by Euronav IMO, August 2018



Source IMO

AMENDED IMO GHG STRATEGY 2023

The revised GHG Strategy incorporates 'levels of ambition' that reflect the overall aim of reducing shipping emissions, including:

Strengthening energy efficiency design requirements of new ships to reduce carbon intensity.

Reducing CO₂ emissions per transport work by at least 40% by 2030 (compared to 2008 levels).

Use of zero or near-zero GHG emissions technologies, fuels and/or energy sources to represent at least 5% (striving for 10%) of international shipping energy use by 2030.

Reaching net-zero emissions from international shipping by or around 2050 and pursuing efforts towards phasing them out...consistent with the long-term temperature goal set out in Article 2 of the Paris Agreement.

COMPARISON 2018 vs 2023 Strategies

	2018 Initial GHG Strategy	2023 Revised GHG Strategy
Absolute emission reduction	2050: At least -50%	2030: -20% striving for -30% 2040: -70% striving for -80% ~2050: -100%
Emission intensity	2030: at least -40% 2050: at least -70%	2030: at least -40%
Fuel uptake target	-	2030: 5% striving for 10%
Just and equitable transition	-	Included
Policy measures	Lists potential short-term, midterm, and long-term measures	Commits to the adoption of midterm measures by 2025, including technical and economic measures
Scope	Tank-to-wake carbon emissions	Well-to-wake GHG emissions



IMPLEMENTATION VIA A 'BASKET OF MEASURES'

The 2023 GHG Strategy states that a basket of candidate measure(s), delivering on the reduction targets, should be developed and finalized comprised of both:

1. a technical element, namely a goal-based marine fuel standard regulating the phased reduction of the marine fuel's GHG intensity; and
2. an economic element, on the basis of a maritime GHG emissions pricing mechanism.



Other Types of FUEL for propulsion

Bio Fuel e.g. Bio Gas and Methanol

Electrification

Wind power

Liquefied Natural Gas (LNG)

Liquified Petroleum Gas (LPG)

Hydrogen Derived Fuel e.g. Ammonia

Nuclear



Wind powered ship



Methanol propelled vessel



BENEFITS OF GREEN SHIPPING

Limiting environmental pollution: help contribute to the elimination of greenhouse gas emissions

Contributing to building a sustainable economy: the improvement of existing transport systems

Health improve:
Emissions generated by green vehicles are not harmful to human health, so green transportation improves the health status of a country



CONCLUSION

With the IMO's new 2023 GHG Strategy, Green shipping is the NEW worldwide trend and brings many benefits to the transportation industry such as:

- Limiting pollution by shipping activities,
- Increase economic benefits of the transportation,
- Technological improvements in energy efficiency production,
- Strategic trend in the development of seaports in the world.



**THANK
YOU**

Capt. A. Coopen

Director
Of
Shipping

Mauritius