

**Forum:** Sustainable Development Committee (Middle School) (SDC)

**Issue:** *Addressing overreliance on international commercial shipping*

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## Introduction

At the beginning of 2020, there were a total number of 98,140 commercial ships of 100 gross tons and above worldwide, equivalent to a capacity of 2.06 billion dead weight tons, which is the measure of how much weight a ship can carry. As communication and technology rapidly advances in recent years, globalization has brought a growing scale of maritime trade. People nowadays tend to be more attracted to products manufactured foreignly, and due to the large scale of demand, individuals are getting products imported from other countries all the time. They are now used to foreign products, and the increased customer demands have eventually led to an overreliance on commercial shipping to import products internationally. However, the international market is extremely dependent on countries like China and Vietnam in manufacturing and shipping out goods.

After the Covid-19 pandemic hit, countries were in need of maritime transport to deliver critical supplies to provide for their citizens. China's Covid lockdown shut down factories, remarkably affecting the global supply chains of different products. Companies and businesses were in shortage of products, making them unable to supply foreign countries with their goods. Furthermore, it also caused a shortage of workers in ports and canals. As some developed countries are resuming their original path of consumption, there is a boost in demand compared to the initial drop during the beginning of 2020 because of the introduction to the virus. Consequently, there are serious issues of delays and blockages in global ports that may last if there is no action taken.

Commercial ships carry around 80% of the traded goods globally, and since ships mainly rely on fossil fuels to power their engines, maritime shipping has contributed to toxic gas emissions. With large consumptions on a daily basis, maritime shipping is responsible for emissions that risk the health of the world's population. In addition, carbon dioxide emissions are also the greatest contributors to global warming. The increasing rates of carbon dioxide emissions would lead to environmental issues including

ocean acidification, wildlife extinctions, droughts, and higher sea levels. Besides air pollution, oil pollution caused by accidents of oil tankers at sea would diminish the living conditions of marine life. Oil spills are extremely difficult to clean up, while suffocating and poisoning significant numbers of organisms that live near the ocean. Moreover, during the process of maritime shipping, collecting and discharging ballast water to a new destination causes marine organisms and pathogens to have a high chance of unintentionally transporting to this new area. They may potentially become invasive species affecting the economical and ecological development of these environments. Ultimately, overreliance on commercial shipping has followed with many negative outcomes that need to be addressed.

## Definition of Key Terms

### Overreliance

Overreliance is the act or state of being reliant on someone or something else excessively, that it causes difficulties in different matters. As our reliance on international commercial shipping increases, one of the greatest consequences is that it increasingly pollutes the ocean during the process of trade. Moreover, supply chains are also falling short.

### Commercial Shipping

Different businesses internationally use commercial shipping, which is the process of shipping large amounts of merchandise goods and services overseas through commercial ships. This is necessary for countries to obtain the products they need from countries that tend to manufacture them on a larger scale or with products they are unable to produce.

### Maritime Transport

Maritime transport is the process of transporting cargo via sea routes through commercial ships. Maritime transport is essential to the current international supply chain seeing as people find it typical using products imported from foreign countries.

### Air pollution

Air pollution is the emission of toxic and harmful gases into the Earth's atmosphere. Commercial ships are highly dependent on burning fossil fuels to power their engines. With large consumptions on a daily basis, maritime shipping is responsible for emissions of carbon dioxide globally. Moreover, to

reduce costs, the type of diesel used by manufacturers is much lower in quality compared to the diesel used to power cars.

## **Oil Pollution**

Oil pollution is either caused by accidents of oil facilities involving pipelines, drilling rigs, storing facilities, or tankers in the shipping process. It is the contamination of the ocean due to oil spills that are extremely hard to clean up, having long lasting consequences on the marine environment.

## **Commercial Ships**

Also known as cargo ships, commercial ships are used to carry different types of cargo for commerce internationally. There are many different types of commercial ships including container ships, bulk carriers, and tanker ships.

## **Container Ships**

Container ships were first introduced in the 1960s during the Container Revolution. Container ships consist of highly compacted containers. With specialized cranes, it makes loading and unloading cargo much more efficient and time-saving.

## **Invasive Species**

Invasive species are organisms that cause ecological or economical difficulties when being introduced into a new environment. Invasive species may pose threats to the original ecosystem, threatening the survival of many native species.

# **Background Information**

## **History of Maritime Shipping**

For centuries, mankind has used shipping overseas to travel and trade with one another. During the Age of Discovery from the 15th to 18th century in European history, European sailors began to search for different trade routes and territories to expand and benefit their civilizations. However at this time, the efficiency and technology of maritime shipping was barely developed, it was time consuming to load and unload ships, also relying on lots of manpower. Therefore, making prices of products manufactured in foreign countries expensive due to scarcity.

### ***Container Revolution***

In the 1960s, the introduction to container shipping in the United States proved to be a big step towards globalized maritime trade. The innovation of standardized containers made operations at sea ports much more efficient and less costly. Containers can also be easily transitioned to different types of transportation such as trucks, rails, or ships with cranes. It saves a lot of time on unpacking and repacking goods, reducing the costs of storage and stowage at sea ports. It is estimated that traditional cargo ships spend half to two thirds the operating time of container ships in port. The reduced cost in time made maritime shipping more advanced and popular. This expanded the shipping routes between the USA, Europe, and Japan from the 1960s to 70s. Other developing countries also followed during the late 1970s, although many were skeptical due to the high initial costs of constructing port facilities such as special cranes, storage space, and railway systems. They weren't able to afford the extreme costs of the construction of these facilities. Moreover, in these still developing countries, labor wasn't as expensive. Although due to the following reasons, this technology was only initially implemented in busiest seaports internationally. Regardless of the high initial construction costs, this was still a great step towards international commercial shipping on a global scale.

## Key Issues

### Environmental consequences of commercial shipping

With numerous commercial ships transporting through international seas regularly, there are definitely environmental consequences that will follow including pollution and balance of marine biodiversity .

#### *Air pollution*

Commercial ships rely on burning fossil fuels to power their engines. The shipping industry currently is responsible for only 3% of all global carbon dioxide emissions. Nevertheless, studies show that if there is no action done to prevent further emissions, it is estimated that global maritime shipping would account for 17% of total annual emissions by 2050. Moreover, the bunker fuel used by cargo ships are relatively much worse than the fuel powering cars. It is a type of diesel of such bad quality, making it literally useless when trying oil refining. First of all, carbon dioxide emissions are considerably significant in worsening the problem of global warming since it is a type of gas that traps heat close to the Earth. The increasing rates of carbon dioxide emissions would lead to environmental issues including ocean acidification, wildlife extinctions, droughts, and higher sea levels. Additionally, air pollution poses a big threat to the health of

individuals worldwide. Air pollution could cause respiratory issues and affect lung development since it is implicated to diseases such as emphysema and asthma. Other studies also show that it raises the chance of an individual's probability to get cardiovascular diseases and cancer. It is estimated that maritime shipping was responsible for 250,000 deaths because of air pollution each year. Furthermore, 6.4 million childhood asthma cases are also the result of international commercial shipping. Thus, negatively impacting the health of citizens globally.

### *Oil pollution*

As the importance and reliance on crude oil increases, the amount of oil tankers transporting oils globally is extremely high. Thus, accidents that happen during the process of transporting oil can often lead to deadly oil spills that contaminate the marine environment. Oil spills can kill large numbers of marine animals such as sea birds and fish that are suffocated or poisoned after being in contact with oil. After feathers and fur are being drenched in oil, animals can also lose the ability to regulate their body temperature. Food sources for marine life would also be destroyed or scarce, making survival even more challenging than before. Human beings would also be affected if individuals consume marine animals that have been exposed to oils. Ultimately, oil spills are extremely hard to clean up and continue to damage the environment even after years of the event. The numbers of oil spills happening annually actually decreased significantly already seeing that in the 1970s there were 24.5 large oil spills, meaning that more than 700 tons were spilled, while in the 2010s the average number is only 1.7 large oil spills per year. Despite this, there are still numerous occurrences of oil spills that are not as large, but still damaging to the environment as a whole.

### *Unintentional transport of invasive species*

When commercial ships transport cargo from one destination to another, they may be unintentionally carrying more than their intended cargo. Ships may be transporting foreign species to new environments, where they can pose as "invasive" species if there are no natural predators present in the new area. Invasive species would affect the biodiversity and balance of marine life in the designated location, damaging the economy, environment, and human health. There are two main ways of how marine organisms are unintentionally transported through ships. The first way is through ballast water, which is water drawn from a ship's surroundings that is stored in specialized tanks. This is crucial for vessels to maintain weight and stability when cargo is loaded and unloaded during its voyage due to the great difference of weight it would bring. Marine organisms can be easily drawn into the ballast tanks and released into a brand new environment depending on where the vessel's destination is. The second way is "biofouling"

which means the process of marine organisms ranging from algae and microbes to sea stars and crabs attaching themselves to the hull of a ship, then dislodging and reproducing in a new environment. Additionally, there are several crannies on the ship's underwater surfaces such as bow thrusters, rudders, and propellers where marine life can collect. The introduction of a new species to a new environment could have many effects. The new species could possibly be unable to adapt to the area and die or survive in low numbers. However, it could also be extremely deadly, changing and damaging the ecosystem. Risks include threatening existing species, degrading water quality, damaging infrastructure including navigation systems, introducing diseases, and leading to trade restrictions. Commercial maritime shipping is now recognized as the largest cause of aquatic species invasions. Currently, over 80% of the world's marine ecosystems have been impacted by destructive invasive species, thus making this issue in need to be addressed.

## Supply Chain Crisis

After the first case of the Covid-19 virus was recognized in China, the new virus spread internationally, affecting the lives of citizens worldwide. Due to the devastating outbreaks, countries started lockdowns, as a result, workers at sea ports and factories were suspended from going to work. Countries such as China and Vietnam, ones that used to manufacture goods in factories weren't able to sustain their production because of the shutdown of factories and lack of workers because of the pandemic. For example, Vietnam, a major provider for American apparel, has stopped the operation of many factories because of the new Covid variants. Moreover, there was a fall in shipping demand during the early days of the pandemic. But now, while developing countries continue to face issues in regards to the economy and pandemic, wealthier countries that have most of their population vaccinated have resumed their patterns of consumption. Although customers resumed their amounts of consumption, the lack of workers in different crucial parts of the supply chain in addition to the initial drop and sudden surge in demand has led to issues of delays, port traffic jams, and blockages in seaports around the world, making shipping fees skyrocket. Before the Covid 19 pandemic, goods shipped from China to the U.S. through container ships took around 40 days, while the new delays have extended that time up to 70 days in July, August, and September of 2021.

## Major Parties Involved and Their Views

### *International Maritime Organization*

The International Maritime Organization (IMO), is a UN specialized organization designated to develop international treaties that are implemented in order to ensure the safety, security, and environmental performance in shipping practices globally. This organization was originally created by a convention adopted at the UN Maritime Conference in 1948, and later on came to force on March 17, 1958, after being ratified by 21 countries. The governing body is made up of all 173 member states of the United Nations. After the Torrey Canyon disaster of 1967, where 120,000 tons of oil was spilled, IMO in the following years introduced measures to tackle the issue. In 1973, the International Convention for the Prevention of Pollution from Ships, as modified by the Protocol of 1978, covered procedures to solve issues of pollution from oil, packed goods, sewage, garbage, and air pollution. Moreover, in 2004, The International Convention for the Control and Management of Ships' Ballast Water and Sediments was adopted to introduce global regulations in efforts to prevent potentially invasive species spreading through commercial ships. Under this convention, all ships have to follow ballast water management standards, and new ships are required to install ballast water treatment systems, and eventually be implemented on all vessels.

## United States

Currently, the ports of the United States are facing serious delays and packed densely with containers. As a greater portion of the population is now vaccinated, the United States is on their way to resume their original patterns on consumption of goods. However, the lack of workers in different crucial parts of the supply chain such as truck drivers and port workers have led to the inability to process the great amount of goods being shipped in from Asian countries. At the Port of Savannah, there are nearly 80,000 shipping containers stacked up, which is 50 percent more than usual. Some ships have been asked to wait at sea for 9 days due to the blockage. These containers are waiting to be loaded onto ships to their final destinations or for trucks to haul them to warehouses of companies. It is estimated that around 700 containers have been abandoned at the port by their owners for more than a month. In an interview with Jeremy Nixon, CEO of freight company Ocean Network Express, he mentioned that the government should spend more funds on the different parts of the supply chain, or else the blockage in North America would continue till 2023.

## China

After the first case of the Corona virus was identified in China during the end of 2019, the newly introduced virus brought a period of turmoil in China. National lock downs forced factories to stop operating, affecting global trade since China was an important supplier for many products. The continuous lack of workers and outbreaks of Covid variants continues to bother the country with this issue. Thus, leading to supply shortages as several developed countries are returning to original

amounts of consumption. In addition to the importance of China as a manufacturer, the large amounts of factories in China also caused even more severe levels of air pollution in addition to the amounts caused by the shipping process.

## Timeline of Relevant Resolutions, Treaties and Events

Date	Description of event
March 17, 1948	<p><b>International Maritime Organization (IMO)</b></p> <p>In an international conference in Geneva, a convention adopted established the IMO.</p>
November 2, 1973	<p><b>International Convention for the Prevention of Pollution from Ships</b></p> <p>Convention tackled ways to counter the issue of pollution from ships from both accidents and operations to reduce damage to the ocean</p>
December 15, 1976	<p><b>Argo Merchant Oil Spill</b></p> <p>Nearly 8 million gallons of heavy fuel oil was spilled on Nantucket Shoals off Massachusetts</p>
November 30, 1990	<p><b>International Convention on Oil Pollution Preparedness, Response, and Co-operation</b></p> <p>Requiring ships to carry a shipboard oil pollution emergency plan</p>
November 27, 1997	<p><b>Guidelines for the control and management of ships' ballast water to minimize the transfer of harmful aquatic organisms and pathogens</b></p> <p>Resolution tackling the introduction of invasive species through ballast water of vessels</p>
March 31, 1978	<p><b>United Nations Convention on the Carriage of Goods by Sea</b></p>

Adopted in order to create a legal regime governing the rights and obligations of shippers and carriers during the process of maritime shipping

## Relevant UN Treaties and Events

- United Nations Convention on the International Maritime Organization, 6 March 1948
- International Convention for the Prevention of Pollution of the Sea by Oil, 12 May 1954
- Promoting effective measures for the prevention and control of marine pollution, 13 December 1969 (**A/RES/2566(XXIV)**)
- Marine pollution, 18 December 1979 (**A/RES/34/183**)
- United Nations Convention on the Law of the Sea, 10 December 1982
- United Nations Convention on the Carriage of Goods by Sea, 31 March 1978
- International Convention for the Prevention of Pollution from Ships, 2 November 1973
- Guidelines for the control and management of ships' ballast water to minimize the transfer of harmful aquatic organisms and pathogens, November 27 1997
- International Convention for the Control and Management of Ships' Ballast Water and Sediments, 13 February 2004
- International Convention on Oil Pollution Preparedness, Response, and Co-operation, 30 November 1990

## Evaluation of Previous Attempts to Resolve the Issue

The International Maritime Organization has previously adopted many conventions and passed resolutions in regards to the consequences of overreliance on commercial shipping. The International Convention for the Prevention of Pollution from Ships (MARPOL) adopted on November 2, 1973 covers solutions on how to decrease air pollution in Annex VI. In 1997, Annex VI was added and came into force in May 2005. This portion of the convention established limits on nitrogen oxides (NO<sub>x</sub>) emissions and required the use of fuel with lower sulfur content, to reduce ozone-producing pollution. Ozone is harmful to the health of individuals and can cause health problems such as smog and asthma. The MARPOL

treaty is pretty successful with limiting ozone pollution, however it doesn't solve the issue of carbon dioxide emissions that is one of the major causes of climate change and global warming.

Secondly, the IMO also adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM) in order to help prevent the spread of potentially invasive organisms and pathogens through ballast water. The treaty is officially effective on September 8, 2017, and ships are required to process their ballast water so that marine life is removed before ballast water is released in a new location. All ships registered under contracting parties to the BWM convention have to carry a ballast water management plan, a ballast water record book, and an international ballast water management certificate. The D-1 ballast water management standards for ships are to exchange their ballast water in open seas, decreasing the chance of survival for organisms released through ballast water. Ideally, this means that vessels stay far away from coastal areas, specifically 200 nautical miles from land and in water that is at least 200 meters deep. D-1 standards must be conformed by all ships once the convention is effective. The D-2 standard, which involves installing professional facilities to filter ballast water, must be followed by new ships and eventually by all vessels. This convention is improving the situation of potential invasive species through the transport of ballast water.

Lastly, the International Convention on Oil Pollution Preparedness, Response, and Co-operation adopted in 1990 requires all oil tankers to have oil pollution emergency plans that are coordinated with national systems in order to effectively respond to accidents on sea. It is obligatory for ships to report their incidents of oil pollution to coastal authorities to take action immediately. The convention also calls for the formation of stockpiles of special equipment in order to combat oil spills. Thus, allowing ships to better respond to inevitable accidents at sea.

## Possible Solutions

One potential solution to eradicating overreliance on international commercial shipping is to develop campaigns in local communities that specializes in encouraging individuals to shop locally. Since the major reason why people rely on commercial shipping is because individuals are getting used to using foreign products, and the demands continue to rise. Campaigns in local communities could possibly host local events and sales for goods and produces that are manufactured locally. Therefore, as demands for goods from other countries would decrease, remarkably decreasing the number of ships that are necessitated.

Moreover, another solution is to request member-nations, particularly MEDC's, to help fund and support scientific research for new, more sustainable ways that can power commercial ships.

Recognizing that burning fossil fuels are the main cause to air pollution, attempting to decrease toxic gas emissions may improve air qualities on a global scale. Although this might not be the immediate way to solve the issue, developing more sustainable ways to support international maritime trade would become applicable in the long run.

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## Appendix or Appendices

**To end with a very important note: plagiarism will NOT be tolerated at PASMUN, and can lead to serious repercussions.**