Committee: Environmental

Issue: Measures towards Safeguarding Maritime Ecosystems

Student Officer: Vassilis Stravoudakis

Position: President

PERSONAL INTRODUCTION

Dear delegates,

My name is Vassilis Stravoudakis, and I am an IB2 student at Pierce College. I will have the honor and privilege of serving as the President of the Environmental Committee, in the ACG MUN. During my high school years, I have attended several MUN conferences and am more than excited to be participating in another one with you. Throughout my career as a MUNer I've had the privilege of being a delegate of the Security Council, while earlier this year I also had the chance to chair in it. I've always been very passionate about MUN and extremely interested on the global approach that it provides you with.

The topic that will be discussed in this Committee is that of Maritime Ecosystems and the measures that can be taken to safeguard them. In my capacity as the president of the Committee, I am hereby presenting you with facts and data, based on research that I have conducted, in relation to the topic to be discussed. These topics can serve as the ground of discussion of such an important issue that is part of the current global agenda. However, I strongly recommend that you conduct your personal research, and I am looking forward to hearing your informed opinions and solutions on such a vital topic. I am looking forward to meeting everyone and to having a very fruitful debate. Please feel free to contact me at any time with any of your questions, I will be more than happy to assist you. Find at: vstravoudakis@gmail.com.

Sincerely,
Vassilis Stravoudakis

TOPIC INTRODUCTION

Marine ecosystems are vital for the human well-being and for the preservation of life. Nearly 40% of the world population lives within the coastal zone, and thus heavily depends on the sea ecosystem which is closely related and interconnected to the land ecosystem. The seas and oceans are our greatest source of biodiversity. They cover 71 % of the Earth's surface and they contain 90 % of the biosphere[1].

Human beings and livelihoods supported by life in the oceans and its ecosystems which vary significantly be level of complexity. However, the last years, over-fishery, the deterioration of the quality of sea water due to pollution, as well as the damage of sea biodiversity, is negatively affecting human life and specifically populations that live close to the coastal zone.

These problems though have been neglected for long and the problem of safeguarding maritime ecosystems has been only recently addressed and attracted the attention of policy makers. Actually, the first policy measures by the European Commission were released in 2016, with the ultimate objective of the EU marine strategy "to achieve good environmental status of the marine environment by 2021"[2].

However, previous attempts to resolve the issue, such as the Convention for the Protection on the Mediterranean Sea in 1975, did not have enforcement power, and as such they did not prove to be effective. Hence, the problem of protecting marine ecosystems still persists and is becoming pressing.

DEFINITION OF KEY TERMS

Ballast

The Government of Canada, defines Ballast as "any solid or liquid that is brought on board a vessel to increase the draft, change the trim, regulate the stability, or to maintain stress loads within acceptable limits."

Ecosystem

"Healthy ecosystems are essential for human well-being, as they provide invaluable functions and services including sustaining living marine resources. The health of

[1] Commission , European. "Our Oceans, Seas and Coasts." Barcelona Convention - Marine - Environment - European Commission, 8 June 2016, Accessed: January 10, 2018.
[2] Commission , European. "Our Oceans, Seas and Coasts." Barcelona Convention - Marine - Environment - European Commission, 8 June 2016, Accessed: January 10, 2018.

ecosystems is therefore not only essential to the environment, but also important to the existence and development of human society."[3]

Exclusive Economic Zone

"The exclusive economic zone is an area beyond and adjacent to the territorial sea, subject to the specific legal regime established in this Part, under which the rights and jurisdiction of the coastal State and the rights and freedoms of other States are governed by the relevant provisions of this Convention."[4]

Gyres

"Plastic materials and other litter can become concentrated in certain areas called gyres as a result of marine pollution gathered by oceanic currents. There are now 5 gyres in our ocean. The North Pacific Gyre, known as the Great Pacific Garbage Patch, occupies a relatively stationary area that is twice the size of Texas."[5]

Marine Biodiversity

Marine biodiversity is defined as all living creatures under the water, as well as their condition and status. However, biodiversity as term may also "encompass understanding the interactions and functions on all levels from individuals up to the whole ecosystem, including changes related to natural and anthropogenic environmental pressures"[6].

Overfishing

"Overfishing occurs when more fish are caught than the population can replace through natural reproduction. The results not only affect the balance of life in the oceans, but also the social and economic well-being of the coastal communities who depend on fish for their way of life."[7]

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[3] "Ecosystem Approaches." *UN.org*, Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs, United Nations, 21 July 2010.
[4] United Nations Charter. Conventions Agrreements. art. 55. Part V.
[5] "No Plastic. A Small Gesture in Our Hands." UNESCO, 12 Feb. 2014.
[6] Acevedo-Whitehouse, Karina, and Amanda L. J. Duffus. "Effects of Environmental Change on Wildlife Health." Philosophical Transactions of the Royal Society B: Biological Sciences, The Royal Society, 27 Nov. 2009
[7] Acevedo-Whitehouse, Karina, and Amanda L. J. Duffus. "Effects of Environmental Change on Wildlife Health." Philosophical Transactions of the Royal Society B: Biological Sciences, The Royal Society, 27 Nov. 2009.

Ocean Acidification

"Increased concentrations of CO2 in sea water causing a measurable increase in acidity (i.e. a reduction in ocean pH). This may lead to reduced calcification rates of calcifying organisms such as corals, mollusks, algae and crustacean"[8]

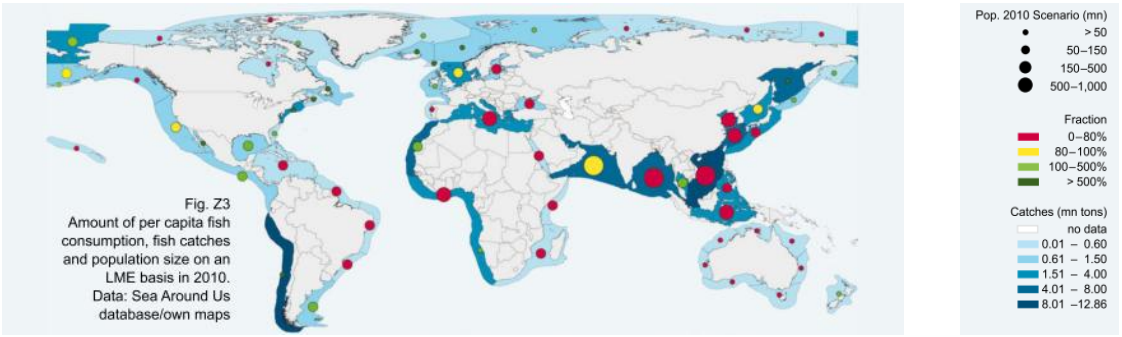
BACKGROUND INFORMATION

The UN Environment Program is warning us by claiming that endangering life under water is not only impacting live-hood but it also has a serious and cumulative economic impact deriving from poor practices for ocean management. This cost is estimated to be US$200 billion per year, whereas the change of climate is expected to increase this cost by an additional US$322 billion per year by 2050.[9]

Marine Fishery

According to WWF more that 85% of the world fisheries have been exploited beyond their biological levels, and some species are even threatened to extinction. This is a problem which demands immediate attention and prevention policies, given that fish populations such as such as Atlantic Bluefin tuna, are driven to extinction, and this threat is cascading to other marine communities and species. It should be further noted at this point, that biologists estimate that there could be anywhere between 500,000 and 5,000,000 marine species which have not been discovered yet. A report of WWF Germany further states that if we continue using the same practices, by 2050 people may no longer rely on fish for protein.[10]

The following diagram depicts the fish consumption in the 64 Large Marine Ecosystems, and it is clearly presented that overfishing is occurring in the majority of the world seas.[11]

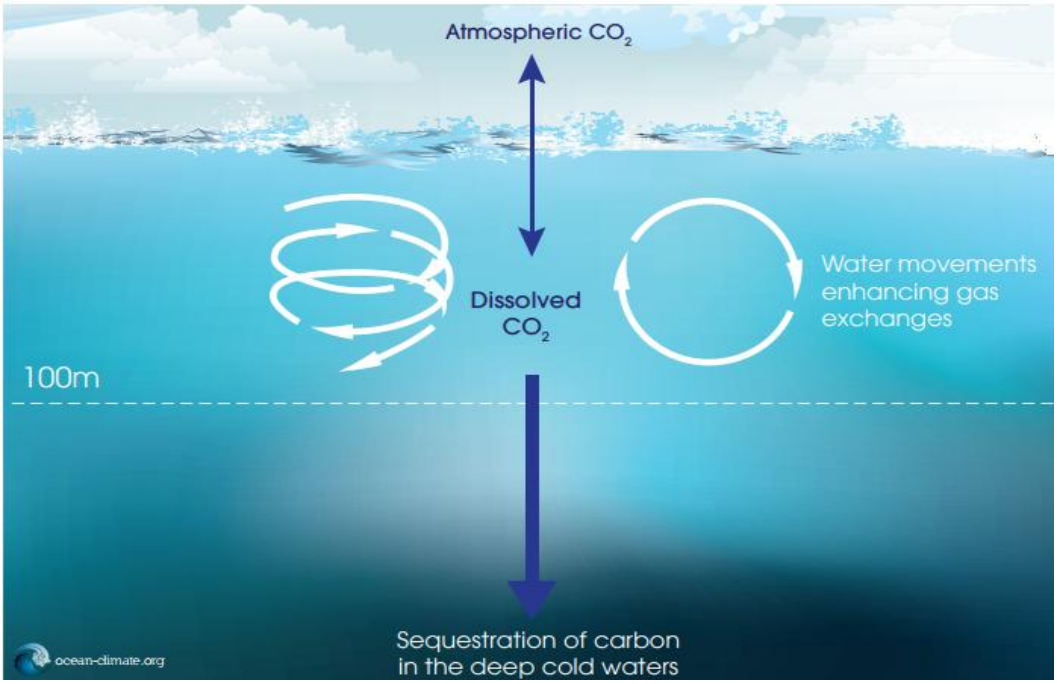


#1 Fishing for Proteins, WWF, 2013

[8] "Impacts of Ocean Acidification on Marine Biology and Ecosystems." Scribd, Scribd.
[9] Watch, Asia-Pacific. "Unpan." United Nations, United Nations, 13 June 2003.
[10] Watch, Asia-Pacific. "Unpan." United Nations, United Nations, 13 June 2003.
[11] Sherman, K., Aquarone, M.C. and Adams, S. (Editors) 2009. Sustaining the World's Large Marine Ecosystems. Gland, Switzerland: IUCN. viii+142p.

Climate Change

Climate change has also been a threatening factor for the marine ecosystems. The Secretariat of the Convention on Biological Diversity (2010) concluded that "the loss of Arctic sea ice threatens biodiversity across an entire biome and beyond."[12] Moreover, the high levels of carbon oxide in the atmosphere, is also blamed for the ocean acidification, thus endangering many species. Climate change and the global warming effect also have an impact on the state of the seas and subsequently the species living under water.



#2 Acidification of Oceans

Despite the fact that most people think that the impact of climate change will affect the ocean ecosystems in the future and that it is not a current issue, according to the outcomes of the Marine Climate Impacts Workshop, that was held in April and May of 2012, at the US National Center of Ecological Analysis and Synthesis in Santa Barbara, the changes are already evident across various taxa and ocean. According to the researchers, their findings are that "the climate change was having a coherent and significant impact across all ecosystems (coastal to open ocean), latitudes (polar to tropical) and tropic levels (phytoplankton to top predators)"[13]

Pollution

The United Nations Environment program estimated that in 2006, 46,000 pieces of floating plastic are contained in every square mile of ocean. Plastics are

[12] "Climate Change Affects Biodiversity." - Global Issues.
[13] "Impacts of Climate Change on Marine Organisms and Ecosystems." Current Biology, Cell Press, 27 July 2009.

broken down into smaller parts known as "micro-plastics" which end up in most beaches around the world. "Plastic debris causes the deaths of more than a million seabirds every year, as well as more than 100,000 marine mammals."[14]

New figures obtained by the Guardian reveal that people bought more than 480bn plastic drinking bottles around the world in 2016, and this number is expected to increase to 20% by 2021.[15]

The countries that contribute more than any other to the ocean's pollution are: China, Indonesia, the Philippines, Thailand and Vietnam, highly contributing to the 8 million tons of plastic which is dumped into the world's oceans every year. According to a study by McKinsey, it is projected the consumption of plastic in Asia, is expected to increase by an astonishing 80 percent to surpass 200 million tons, in year 2015.[16]

Marine Biodiversity and Pollution

The ships transporting cargo use ballast water during their travel to different ports. When new cargo is loaded on the ship, ballast water is released along with the organisms that were originally collected with it. The result is the introduction of possibly new species into the new environment, possibly causing major ecological and economic damage to the ecosystem. As an example, 200 million metric tons of ballast water is discharged into U.S. waters annually. Of this approximately 30 percent is of foreign origin, outside the U.S. Exclusive Economic Zone.[17]

Case studies

Over-fishery of China

A report of the Food and Agriculture Organization (FAO) of the United Nations in 2016, stated that in 2014 China was responsible for over the 18% of total fishery in the world, and by 2030 this percentage is expected to increase to 38% which is the highest of any other region. [18]Having exhausted the ability to fish in their seas, Chinese fishermen are looking for other sources of fish and expand to areas outside China's economic zone. Half of the coastal wetlands, 57% of

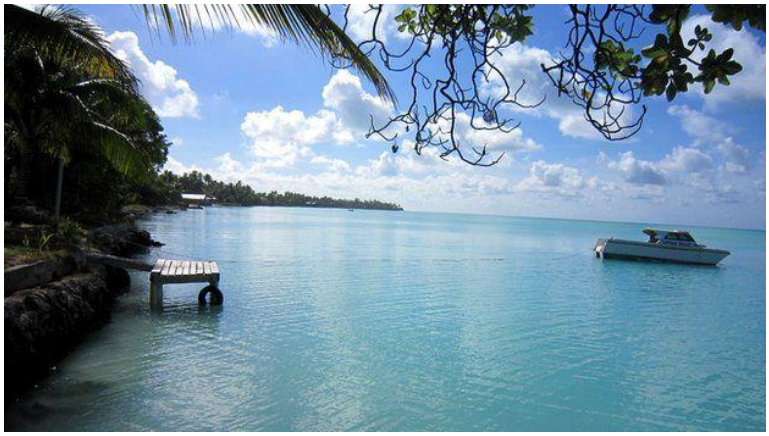
[14] Brierley , Andrew S. "Impacts of Climate Change on Marine Organisms and Ecosystems." Facts and Figures on Marine Pollution , Unesco, 28 July 200ADAD.
[15] Laville, Sandra, and Matthew Taylor. "A Million Bottles a Minute: World's Plastic Binge 'as Dangerous as Climate Change'." The Guardian, Guardian News and Media, 28 June 2017.
[16] "Saving the Ocean from Plastic Waste." McKinsey & Company, 12 Nov. 2015.
[17] Fisheries, Office of Sustainable. "Recreational Fisheries Management." Office of Sustainable Fisheries, NOAA Fisheries, 3 Apr. 2013.
[18] *The FAO counts China as a single region—the others are Europe and Central Asia; North America; Latin America and Caribbean; Japan; "other East Asia and the Pacific"; Southeast Asia; India; "other South Asia"; Middle East and North Africa; Sub-Saharan Africa; and the "rest of the world.*

mangroves, and 80% of coral reefs in China have been lost, and this is really devastating given that their importance inbreeding, and nurturing, grounds for fish.

The main reason that these species have vanished is the way that the fishermen are fishing. In particular, fishermen are using a technique called trawling, during which they throw nets reaching the bottom of the sea, and which when dragged on the surface, they destroy coral reefs and other endangered species. Moreover, the nets typically trap "trash fish", which are fish which are not part of the Chinese diet, and as such it is thrown away. Occasionally, these fish and even sea turtles caught by accident are sold to the black market of West Africa countries.

The technique of trawling has been prohibited in many countries, given its disastrous contribution to ocean ecosystems. As an example, in 2015 the government of Chile prohibited permanently this technique and countries such as Indonesia have enforced restricted use. The Food and Agriculture Organization of the United Nations (FAO) has reported that "the world's commercial fish stocks that exist at biologically sustainable levels has declined from 90% in 1974 to 68.6% in 2013. In other words, nearly one-third of global commercial fish stocks are already being overfished. The total number of Chinese fishing boats sailing on the high seas and in other countries' coastal areas runs just under 2,500."[19]

Pacific Island Overpopulation



#3 The ocean of Kiribati before the tide moves out

The Kiribati chain of islands at the Pacific Ocean, is a complex of beautiful islands and one of the most populated countries on earth, and a place which is running the risk of disappearing due to the change in the climate which in the case of tide, is causing the ocean waters to rise well above the surface area of the islands .Kiribati is a complex of islands which covers an area close to the size of India: the overall ocean area covered by these islands is 3.5 million square km (1.35 million square miles). However, the majority of the population – around 50,000 people - lives in a very small island called Tarawa, which has become overpopulated with a population density that resembles that of Tokyo or Hong Kong.

[19] Freelanceqz. "China Fished Itself out of Its Own Waters, so Its Fishermen Are Now Haunting Other Nations' Seas." Quartz, Quartz, 4 Apr. 2017.

Moreover, the land on this island is only six feet and 6 inches (2 meters) above the sea level, which makes it very vulnerable in the event of the rising seas. The inhabitants of the main island of Kiribati - South Tarawa – rely for survival on the seas that surround their country.

 # 4 The bottom of the ocean of Kiribati after the tide moves out

However, the seas in the area are highly polluted due to overpopulation and the island conditions of living of the inhabitants. "We have contamination from housing, agriculture, from people holding pigs, the sanitation practices" says Peter Sinclair, Secretariat of the Pacific Community. Unfortunately, the overpopulation of South Tarawa, along with the impact of climate change is threatening life on the islands of Kiribati. If the problem persists the habitants of the island will soon run out of food and water.[20]

The Case of Palau

The cases of China and Kiribati Ocean Pacific islands are a real proof of the threats which have been discussed earlier in this report, and need immediate action. On the other hand, other countries have already been alerted about the potential negative effects due to the destruction of the marine ecosystems and have instilled measures to protect their seas. Such an example is Palau.

Palau is relatively small country, between Australia and Asia, in the continent of Oceania, and it covers 459 square kilometers of land, making it the 202nd largest nation in terms of land area. The population of Palau is just above 20,000 people (in 2012 there are 21,032 people living in the country), with a density of 46 people/km^2.

Despite its small size and population, the small island nation – which became independent just 24 years ago - controls a vast EEZ (exclusive economic zone) full of incredible marine diversity, including 1,300 species of fish. The government of Palau has long ago understood the importance of preserving their economic zone, and has established processes and mechanisms that will protect their fisheries. One of these

[20] "Kiribati's Climate Change Catch-22." BBC News, BBC, 8 Dec. 2015.

processes is called “bul” and it is process during which occasionally breeding grounds are closed for fishing. Despite, the pressure for fish stocks exercised from the international markets, the government of Palau has restricted access to fishing or extraction for 80% of their exclusive economic zone. In order to secure the proper enforcement of this restriction, Palau had to use high-end technology which they could not afford. The strategy that they followed in order to raise the money required was to launch a crowd funding campaign which up to 2015 helped them raise $53,000.

The Case of Niue

Another small island of the pacific ocean which is an independent community in free association with New Zealand, called Niue, has realized the importance of protecting its marine ecosystem, and specifically its biggest raised coral atolls for which it is worldwide known, and with the largest density of grey reef sharks.

 # 5 The island of Palau

Thus, Niue has also created a marine protected area which extends to more than 40% of its sea area. This program was accomplished with the help of the National Geographic and the UN development program. At the Malta Ocean Conference that took place in October 2017, the government of Niue announced its decision to create a large-scale marine protected area (LSMPA) surrounding 40 % of the country's Exclusive Economic Zone (EEZ).

The protected area will consist of almost 127,000 km^2 and once recognizedas such, it will be the 28th largest in the world, and second in to Palau in terms of EEZ protected. This initiative represents a major contribution by Niue to Sustainable Development Goal (SDG) 14, specifically its target 14.5, which aims “to place 10 percent of the

#6 Niue island corals

ocean under some form of protection by 2020"[21]

MAJOR COUNTRIES AND ORGANISATIONS INVOLVED

The Pacific Alliance

Alliance to protect Galapagos, Malpelo Island, and Cocos. The governments of Ecuador, Costa Rica, Colombia and Panama plan to designate a thousand square kilometer area of the Pacific Ocean as a marine conservation zone. Representatives of the four countries say they hope to agree on a final plan this year (2018).

Germany/WWF

WWF is one of the world's largest conservation organizations, conceived in April 1961.

HELCOM

HELCOM (Baltic Marine Environment Protection Commission - Helsinki Commission) is the governing body of the Convention on the Protection of the Marine Environment of the Baltic Sea Area, known as the Helsinki Convention. The Contracting Parties are Denmark, Estonia, the European Union, Finland, Germany, Latvia, Lithuania, Poland, Russia and Sweden.

US / Ocean Conservancy/ Greenpeace

Environmental organizations, fisheries enforcement officials, scientists, celebrities, government officials and fishermen have sailed in partnership with Greenpeace to defend the oceans and show what is happening on the water.

Intergovernmental Oceanographic Commission of UNESCO (IOC/UNESCO)

UNESCO's Intergovernmental Oceanographic Commission (IOC), established in 1960, promotes international cooperation and coordinates programs in marine research, services, observation systems, hazard mitigation, and capacity development in order to understand and effectively manage the resources of the ocean and coastal areas. It represents 142 Member States.

International Maritime Organization

IMO is the United Nations (UN) specialized agency with responsibility for the safety and security of shipping and the prevention of marine pollution by ships. IMO, with its 170 Member States, provides a framework for shipping trading, and has adopted 52 treaties regulating virtually every technical aspect of ship design and

[21] "Goal 6: Clean Water and Sanitation." UNDP in Cook Islands, Niue, Samoa, Tokelau.

operation, the most important of which – concerning the safety of life at sea and the protection of the environment – today apply to 99% of the world's merchant fleet. IMO adopts international shipping regulations but it is the responsibility of governments to implement those regulations.

TIMELINE OF EVENTS

Date	Description of event
1972	London Convention: In the 1950s-1970s, the United States and other countries became increasingly concerned about the environmental impacts of human activities on the marine environment, including the uncontrolled disposal of wastes into the ocean. The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter of 1972, known as the London Convention, is one of the first international agreements for the protection of the marine environment from human activities
1974	Launch of The United Nations Environment Programme (UNEP): Regional Seas Program is an international collaborative approach to protect the marine environment and its resources
1980	Convention on the Conservation of Antarctic Marine Living Resources
1985	Nairobi Convention
1992	OSPAR Convention to regulate and control marine pollution in the North Sea and North Atlantic
2004	International Convention for the Control and Management of Ships' Ballast Water and Sediments (Ballast Water Convention): An international treaty that aims to prevent the spread of harmful aquatic organisms from one region to another, by establishing standards and procedures for the

	management and control of ships' ballast water and sediments. It was adopted in 2004 but has not yet entered into force
December 2009	'Oceans and the Law of the Sea'; 'Sustainable Fisheries'
April and May 2012	Marine Climate Impacts Workshop by the US National Center of Ecological Analysis and Synthesis in Santa Barbara
August 2014	Proposal of the Open Working Group on Sustainable Development Goals submitted to the United Nations General
September 2014	Conference on Small Island Developing States
December 2015	Oceans Day, organized by UN
December 2016	UN Resolution adopted by the General Assembly
October 2017	OurOcean conference organized in Malta
June 2017	UN Conference to support the implementation of Sustainable Development Goal 14: Conserve and Sustainably use the oceans, seas and marine resources for sustainable development

RELEVANT RESOLUTIONS, TREATIES AND EVENTS

'Oceans and the Law of the Sea'; 'Sustainable Fisheries'; - December 2009

"By a vote of 120 in favour to 1 against (Turkey) with 3 abstentions (Colombia, El Salvador and Venezuela), the Assembly adopted its 34-page omnibus resolution on oceans and the law of the sea, by which it expressed its deep concern at the destruction of marine habitats that might result from land-based and coastal development activities. Among other things, it recognized that realizing the benefits of the Convention on the Law of the Sea could be enhanced by international cooperation, technical assistance and advanced scientific knowledge."

Resolution adopted by the United Nations General Assembly on 23 December, 2016 about the Oceans and the Law of Seas

PREVIOUS ATTEMPTS TO SOLVE THE ISSUE

United Nations Environment Programme (UNEP)

Regional Seas Program is an international collaborative approach to protect the marine environment and its resources. Launched in 1974 by UNEP.

Convention on the Conservation of Antarctic Marine Living Resources (CAMLR Convention)

A Regional Seas Convention for the Antarctic Region. It was adopted in 1980 and entered into force in 1982.

Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (Nairobi Convention)

A UNEP Regional Seas Convention for the Eastern African region. It was adopted in 1985 and entered into force in 1996.

1992 OSPAR Convention

Aims to regulate and control marine pollution in the North Sea and North Atlantic.

Helsinki Commission on the protection of the Baltic Sea (Helcom)-1992, latest amendment July 2014

The Convention covers the whole of the Baltic Sea area, including inland waters as well as the water of the sea itself and the sea-bed. Measures are also taken in the whole catchment area of the Baltic Sea to reduce land-based pollution.

Barcelona Convention on the protection of the Mediterranean Sea

In 1995, the Action Plan for the Protection of the Marine Environment and the Sustainable Development of the Coastal Areas of the Mediterranean (MAP Phase II) was adopted by the Contracting Parties to replace the Mediterranean Action Plan of 1975.

EU Water Framework Directive -2015

Goal 14: UN – Protect and Sustainably use of the Oceans

POSSIBLE SOLUTIONS

Following the above discussion and analysis, the imperative of protecting the oceans and the marine ecosystems is evident and requires immediate attention and

action at a global scale. There have been numerous attempts in the past to protect marine ecosystems and to detain behavior that has destructive consequences on the biodiversity of the seas. However, these actions and policies have not been enforced in a systematic and organized manner and have been perceived by countries and populations more as suggestions instead of formal policies. Possible solutions – but not exhaustive to the topic. I highly advise you to conduct your own research too, and try to holistically approach the topic so as to enable yourselves to find more possible solutions – to resolve the problem of safeguarding marine ecosystems, some solutions that you should take into consideration are the following:

- Sustainable Management policies to protect ecosystems: countries and governments should be come alert and enforce regulations that will allow them to protect their marine ecosystems
- At a local and national level policy making to fight overfishing. Countries should educate people on the problem of overfishing and should enforce strict regulations and penalties for fishermen that use destructive methods and techniques for fishing
- At a global level control climate change. The problem of the climate change should become a priority of the global agenda, and people need to be educated on methods that could support initiatives to protect the climate and the environment.
- At a global level manufacturing companies should reduce the use of plastic in their production and should use more environmentally friendly packaging to avoid littering the seas.
- Shipping companies should protect the marine ecosystems of various seas through proper management of ballast waters.

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