

## Background information

More than 71 percent of the world's surface is covered by ocean. This does not only affect countries that are located along the coastline, but also variety of all the other countries, which do not have access to sea or ocean, as it represents the largest ecosystem on our planet. These are the three main issues, we are facing nowadays

### I. Overfishing and destructive fishing

Reduced inflow from the rivers, caused by increasing damming, might endanger some species of fish, whose reproduction cycle is often affected by reduced inflow of freshwater.

Maximum sustainable yield is the number of fish that may be harvested from a certain population of fish, calculated by fisheries biologists each year. For example, the proportion of fisheries, which have surpassed this number given for cod, has tripled from 10 to 30 percent between years 1974 to 1994. But this doesn't necessarily only apply to the countries along the North Atlantic coast. More than a half of the island nations in the Pacific Ocean, that depend on fishing as their primary economic resource, practice overfishing at the expense of their coral reefs. Currently, 40 percent of the world's fish coming to the market is produced only by 14 fishing giants (like Maruha Nichiro in Japan for example), which creates a sense of monopoly.

Destructive fishing practices have also been seen, not only in last decades, but surely even earlier during the beginnings of commercial fishing. There are generally three kinds of this illegal and pirate-like practice. The first one refers to the commercial overfishing, where large nets are frequently used, supposed to save time and work to the mariners. The net is spread across a big surface, catching everything alive, that is big enough to get stuck in the net. This way of fishing leads to the damage of coral reefs and seabed, as well as death of many ocean organisms that weren't meant to be caught. The mass of these organisms is than called "bycatch" and is discarded, usually already dead, back into the sea. Bycatch usually makes up forty to ninety percent of the whole catch. Overfishing is practiced all across the world, although in much smaller scale as in 1980's and 1990's. Another technique is named blast fishing. It simply consists of throwing an explosive into the water, which than creates a blast wave and kills the fish. Not only do the explosives also kill organisms which weren't meant to be the target of fishing, but also damage coral reefs and seabed. Blast fishing is mostly found in Indonesia but is practiced in a very small scale. Last technique worth mentioning is poison fishing, where coral reef fish are intentionally poisoned and sold to the aquarium owners in Europe and North America or to the Hong Kong's and other Asian cities' restaurants, where reef fish are a very popular meal during celebrations or such events. The diner can choose the live fish right from the aquarium after paying an equivalent of something around 300 American dollars. Cyanide poisoning is, although illegally, used in pacific areas such as Philippines and Indonesia, stretching to the coast of east Africa and Madagascar. It is estimated that the illegal coral reef business reaches the worth of one billion American dollars annually.

## **II. Erosion**

According to the UN, soil flat of size of a football field is lost every 5 seconds. Mangroves represent the biggest erosion-fighting system worldwide. With the length of their roots – up to whole five meters – these trees populate between 138 and 200 thousand square kilometers of coastal areas. These populations of various mangrove species spread from northern to southern America, eastern and western Africa, Madagascar, India, Indonesia, China, Australia and Pacific islands. There are many ways, in which these trees are so crucial to the environment sustainability. First of all, they serve as nurseries for thousands of fish species and thousands of other marine species, that depend on mangroves as their shelter and prey provider during their youthhood and adulthood. One of the biggest contributions of mangroves is the effect, they have on the global ecology. It is their carbon dioxide uptake from the air, which is around ten times more effective than the uptake of rainforests. Annually, quarter of the carbon dioxide emissions, that are absorbed by plants, is absorbed by mangrove forests. Therefore, they represent a crucial role at fighting climate change. Although mangrove populations are without any doubt so important, their number have drastically decreased since 1980, as twenty to thirty percent of mangroves were lost due to human activities. These include logging, farming (especially fish and shrimps), building and widening new cities or villages and beach clearance due to tourism. With rising sea levels, erosion and floods are more frequent and devastating all around the world. Countries located in eastern Asia, such as Philippines, may however find themselves in even worse situations, as mangroves have protected them not only from erosion, but also from typhoons and strong winds.

But Erosion is not only dangerous to the countries themselves. It is among the biggest threats facing the wild marine life. Parts of the soil, including elements such as phosphorus, potassium or carbon feed algae, which than create colonies on the sea surface and prevent the flora at seabed from getting enough sunlight for their photosynthesis. Both eroded soil and colonies-forming units affect the organisms at seabed this way. That leads to less prey such as seaweed, on which many organisms depend.

## **III. Coral bleaching**

Since the beginning of the industrial revolution, ocean's Ph has decreased by 0,1 Ph units. This symbolizes astonishing 30 percent increase in the ocean's acidity and there is one particular factor to blame – carbon dioxide. As CO<sub>2</sub> rises into the atmosphere, it is estimated that 25 percent is absorbed by plants and another 25 percent by ocean. The remaining half is a flagship of the problem we today call "Climate change" or "Global warming". Unfortunately, acidification is one of the key factors, right next to the sea temperature rise, contributing to the stressing of coral reefs, which than bleach. Bleaching is a process, when coral starts moving so wildly, it expels symbiotic algae, which provide it with products of photosynthesis. Then, when coral dies, only a bleached skeleton remains.

Created by **Dominik Soudil**.

Coral reefs, although covering only quite small percentage of ocean's flat, are crucial for both humans and marine ecosystem. More than half billion people from Pacific islands and Indonesia depend on fishing by these reefs and from the tourism they attract. In case of eastern Africa, corals are more of a tourist matter, although very important. Reefs are home to more than 25 percent of all marine species. Between 2014 and 2016, 20 percent of the Great barrier's reef corals have died. It is estimated, that half of the reefs could be lost by 2070.

## UN involvement

**Overfishing** – UN has released a policy in 2015, urging all ratifying countries to combat illegal fishing. Some of the solutions include education, infrastructure, that would help to seek out the offenders of the law at sea or quotas for fishing to ensure sustainability.

**Erosion** – UN has not yet implemented any resolution regarding erosion and marine protection. The issue of erosion is however, frequently addressed. Possible solutions include forbidding the mangrove logging, planting trees (including mainly mangroves), sustainable farming and strengthening of the seashore in areas, where mangroves would not be applicable.

**Coral bleaching** – the UN believe that the bleaching could be stopped or at least slowed down by the Paris agreement signed in 2015. There are more options however, such as tourism regulation or education of the developing countries on the importance of reefs preservation.

## Questions to consider

- 1) Is your country directly affected by coastal erosion, illegal fishing/overfishing, or presence of coral reefs? Do these topics carry any relevance or are they rarely talked about in your country?
- 2) Has your country took any countermeasures to stop any of these threats?
- 3) Were there any incidents in your country or it's neighborhood, such as illegal or destructive fishing, coral destruction and massive/creeping erosion?
- 4) Is there anything lacking in the way fishing is controlled? Do you agree with the monopolies?
- 5) Is there anything else except for Paris treaty, that you would like to implement, to ensure the carbon dioxide emissions would be radically cut down?

## Sources

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