CUIMUN XXIV Study Guide

COP24

STUDY GUIDE

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Welcome Letter

Arkan Diptyo, Director

Dear Delegates,
I am Arkan Diptyo, your director for the COP24 committee in CUIMUN XXIV. Currently in my final year in KU Leuven Faculty of Economics and Business in Belgium, I am also undertaking an internship in one of Brussels' various economic advisory lobbying firms. Before this year I had been involved in various student organizations in Belgium, with my campus' MUN delegation - KUL Brussels MUN being the only one that stayed as my second family ever since the first week in university. I have chaired various specialized committees especially Crisis, indulging in the history geek inside of me, and also becoming the Director General for the upcoming Brussels Model EU 2019 in April. I am looking forward to see fruitful debate in climate issues dear to me - as being born and raised in an Indonesian island has always reminded me of the pristine and beautiful sea. Thus the topic of marine environment pollution and preservation has always been something of my interest. Outside of MUN I like to chat about my travels to over 40 countries, traversing in various new languages, and dancing the night away! I always bring the same fully-charged energy to both debate and in the socials, and so I am looking forward to seeing all of you also bring the same energy to Cambridge!

Aggelina Tsilimpari, Assistant Director

Dear Delegates,

My name is Aggelina Tsilimpari and I will be serving as one of the assistant directors of the COP24 committee for CUIMUN 2018. I am from Greece and I am now entering my third year of my BA in Education Studies in UCL. My MUN career started years ago in high school as a delegate of the Youth Assembly in DSAMUN in Greece. Since then, I have participated in a variety of conferences serving positions such as delegate, judge, chair, president in many committees and finally reached the secretariat. Furthermore, I was one of the student officers in the UCLMUN society for two consecutive years. My involvement in the society was a revelation as I was responsible for the preparation of every weekly workshop, chairing and helping members of the society to develop useful skills to achieve their goals and enjoy the conferences attended. However, apart from MUN I am a traveller, a passionate photographer and arts person, a blog writer and a gymaholic too. Welcome to COP24 of CUIMUN 2018 and I am looking forward to meeting you all and enjoy a fruitful debate!

Malte Westphal, Assistant Director

Dear Delegates,
My name is Malte Christoph Westphal and I am currently finishing my Master's degree in IT-Management and -Consulting at the University of Hamburg. Despite not going for a career in the field, I have always been interested in international relations, so I started doing MUN several years ago. Since then I have participated in dozens of MUNs in almost every capacity imaginable, from Delegate to Secretary General, all while using it as an excuse to travel to places I would never end up going otherwise, which is also a great experience. I am very much looking forward to coming back to Cambridge after participating as a delegate years ago, and hope for an

excellent committee. I believe the COP24 is a great example for cooperation and compromise to address a common risk to all of humanity. This especially shows how, despite special interests, cooperation often yields the best outcome for (almost) every nation. In this spirit I am looking forward to a challenging and constructive debate.

Introduction to the Committee - Conference of the Parties

The Conference of the Parties, or COP, is an annual conference of nations party to the framework of United Nations Framework Convention on Climate Change (UNFCCC) with its secretariat in Bonn, Germany. The objective of this meeting is to assess, on a yearly basis, the progress of mitigating and preventing the effects of Climate Change. Each year, the delegations from at least 165 UNFCCC signatory countries are brought together, rotating host countries across the world. Each edition of COP also brings forward specific focus issues of climate change. For example, COP23 (2017) in Bonn, Germany, brought forward many water-related issues. Presided over by Government of Fiji, COP23 brought the attention to possible climate migration and a lot of other high-key partnerships such as the Water Action Day and Global Water Partnership. Meanwhile, this year's edition COP24 in Katowice, Poland, brings on the issue of carbon sequestration through soil and forests into light.

The first ever COP took place in Berlin, Germany, in 1995. It was one year after the UNFCCC itself came into effect in 1994. Ever since, the annual conference have produced various milestone international documents drafting up action plans on combatting climate change. The most known of these includes Kyoto Protocol in 1997 and the Paris Agreement in 2015. While various head of states have made appearance in the conference over the years, the COP21 in Paris with the signing of the Paris Agreement made a record attendance of over 150 heads of states and governments. This year's COP24 Katowice is projected to attract over 30 heads of states and also various climate change experts, personalities and ambassadors giving in materials, demonstrating climate change actions, and other bilateral/multilateral partnership opportunities.

The debate within COP itself usually divides itself between the Annex Parties and Non-Annex Parties. With Annex Parties being composed of mostly developed countries and Non-Annex Parties being the developing south, lobbying for a differing-weighted responsibility is required between economically more stable nations and the ones still in transition. However, occasionally developed countries disagree on the goals to be set. One of the most glaring example was the US government, which has signed but not ratified the Kyoto Protocol.

As a last remark, unlike most other international meetings and conferences under UN framework, COP produces working documents known as Decisions, which sets future targets and action plans. Hence, compared to the resolutions of other bodies, the language used here can be more forceful and concrete in nature.

Topic A: Combating Marine Pollution

Introduction

We live in a world of rapid changes in political regimes, economic changes and, most of all, environmental changes that disrupt our climate worldwide. The growth of human population and the emergence of non-renewable resources, heavy metals and fossil fuels, such as coal and petroleum, have led to the release of waste and other contaminants into our seas and oceans. Moreover, pesticides, plastics and marine debris have created garbage patches in various oceans, leading to significant water pollution. Oil spills, cargo and shipping, as well as deep sea-mining, all influence CO_2 emissions. As a result, the whole ecosystem is being influenced as the resources provided to animals consist mostly of untreated sewage and toxic chemicals.

This has a major negative impact on the food chain, resulting in the endangerment of various species and atmospheric pollution. However, the issue describes a bilateral relationship, since the disruptions caused to the function of the ecosystem heavily influence the atmosphere and the climate as a whole, but the rapid climate changes also influence the atmosphere. Hence, through the topic of marine pollution we wish to focus on ocean climate change approaching two sides of the issue. More specifically, this study guide will primarily discuss waste coming from inland such as chemicals, plastics and other toxic waste dropped in the sea. Secondly, this study guide will approach the topic of marine pollution in terms of sea contamination as a result of cargo and deep-sea mining.

Timeline of Events

1948: The Federal Water Pollution Control Act of 1948 is adopted on the 12th of August, which sets grounds on water quality programs and provision of financial and technological help.

1960: The concept of deep-sea mining rises and an establishment of a framework is articulated.

1972: The Supreme Court raises awareness on federal common law on water pollution actions and their consequences.

1979: The first World Climate Conference takes place.

1985: The Clean Water Act (CWA) establishes the US grounds for goals on water pollution eradication and elimination of toxic substances release into water.

1988: The Intergovernmental Panel on Climate Change (IPCC) is set up, aiming to raise awareness on climate change.

1988: The Khian Sea waste disposal incident occurs, in which 4,000 tons/14,000 of non-toxic ash from waste is dumped near Haiti.

1989*: Exxon Valdez* oil spill in Alaska, one of the biggest oil spills at that time.

1990: On the 13th of April, the US adopt the Oil Pollution Act aiming to prevent civil liability from future oil spills on the coastlines of the region.

1990: Termination of sewage sludge dumping in all North- Western Europe countries apart from the UK in which dumping was terminated two years before.

1992: The United Nations Framework Convention on Climate Change (UNFCCC) is opened for signature and eventually enters into force by 1994.

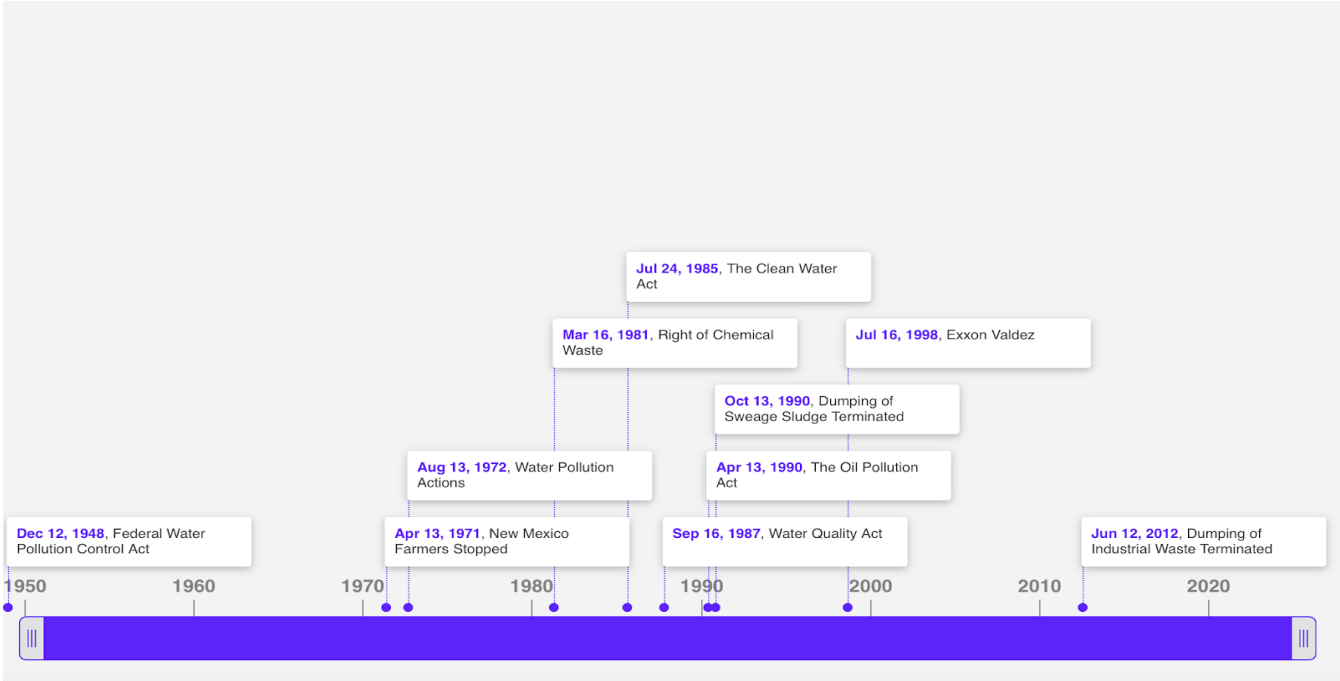
1995: The first Conference of the Parties (COP 1) takes place in Berlin.

1997: The Kyoto Protocol is formally adopted in December at COP3, which regards emission reduction targets of developed countries.

2005: Entry into force of the Kyoto Protocol. In accordance with Kyoto Protocol requirements, Parties launched negotiations on the next phase of the Protocol.

2012: Termination of Industrial Waste dumping into waters.

2015: COP23 is held in December in Paris, France.



Discussion

Waste coming from Inland

To begin with, according to the WWF website, "over 80% of marine pollution comes from land based activities" (WWF, 2018). Waste coming from inland takes various forms such as oil spills and toxic chemicals, fertilizers, marine debris formed by solid waste and plastic sewage that create garbage patches into seas and oceans. The impact of marine pollution is massive and influences countries all around the world in economic, political, social and health aspects as everything starts from the environmental conditions created for survival and growth.

Oil spills and toxic chemicals

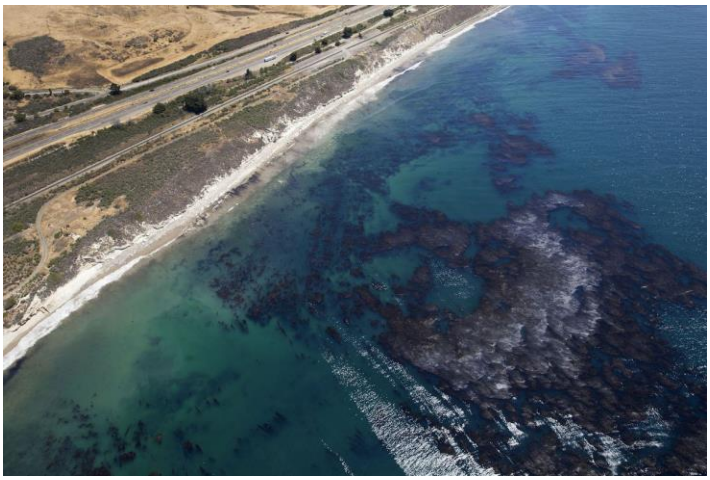
One major factor behind severe marine pollution and climate change are oil spills and the release of toxic chemicals into seas and oceans. As a result, chemicals are spread and travel around the oceans influencing heavily marine wildlife and humans in many ways. Research by the US National Research Council indicated that "46% of the oil entering the oceans come from marine transportation, either through accidents or deliberate discharges" (WWF, 2018).

The problem with oil spills is a two dimensional one. Primarily, oil may be illegally discharged in the seas in the form of bilge oil, which is a mixture of oil, water and various contaminants that ships hold throughout their journeys. Hence, in order to avoid being charged, they dispose the waste outside the port. "Dumped bilge oil accounts for nearly 10% of all oil entering the oceans each year" as reported by the WWF (2018). Nevertheless, there is also the case when the oil ends down on the seabed as a result of a shipwreck. This leads to oil and gasoline leaking out and resurfacing as time goes by. For instance, during World War II the oil tanker *USS Mississinewa* was sunk near the island of Yap in Micronesia. Due to a severe cyclone, many litres of oil and gasoline leaked out of the shipwreck, which eventually reached the beaches of the island (Wilkins, 2004). Consequently, fishermen were forced to stop working for at least two months, which affected tourism and the financial state of the region, as the costs to clean up the coastline and recover the affected areas were enormous. It should be noted that many severe health issues presented in animals and humans as well.

The damage done by oil spills is inextricably linked to the use of toxic chemicals and their impact on marine ecosystems. In this case, chemicals are majorly used in order to break down the oil and attempt to resolve the issue of spills in the sea. Nevertheless, some of these chemicals turn out to be toxic for marine wildlife and detrimental to human health. It is impossible to achieve a full clearance of the oil spilled into oceans and seas and a very time-consuming process carried out for more than a decade under specific circumstances.

Pollution coming from oil spills and the chemicals used to clear it up or otherwise released through plastic debris lead to the decrease in marine biodiversity and environmental damage overall. For example, the number of seabirds killed each year on the eastern coast of Canada reaches a minimum of 300,000 (Wiese, 2002). Moreover, man-made chemicals can be toxic, persistent or even bioaccumulative. In other words, they are not appropriate for the environment, causing a greater damage instead of assisting its recovery. Additionally, as they increase in concentration through the food chain, they reach humans, since humans consume fish. Again,

some of the health issues caused include cancer, damage to the immune system, behavioural problems, and reduced fertility (WWF, 2018).



Garbage Patches

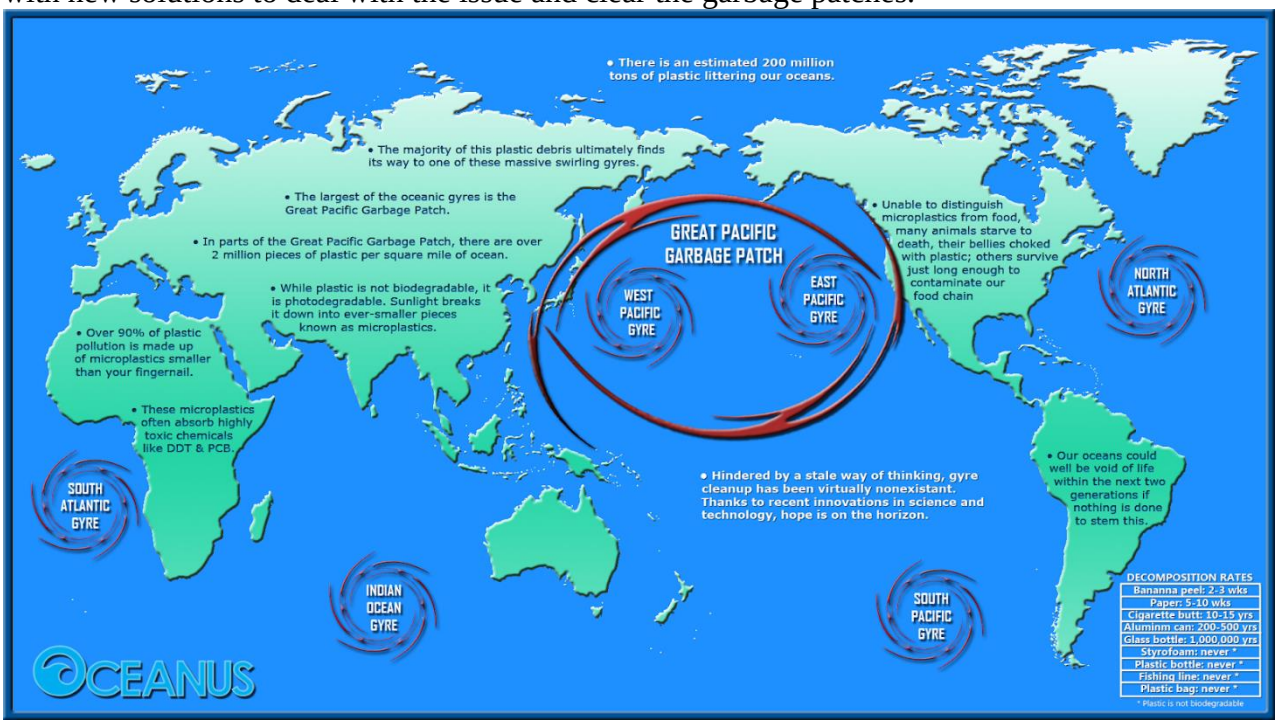
Speaking of how plastic debris releases toxins, garbage patches can be explained as areas of marine debris (plastic waste and other litter), that form an "island" of solid waste. Garbage patches are created as a result of marine debris collected in one place, as it travels through the ocean due to strong winds. For instance, "ghost nets" are fishing nets which are released into the sea either on purpose or accidentally. Along with plastic waste, they cause the entrapment of marine wildlife. As a consequence, animals beneath the sea and seabirds eventually die from suffocation, causing a further disruption of the food chain.

The biggest Garbage Patch existing nowadays is the Great Pacific Garbage patch, located in the North Pacific Subtropical Convergence Zone. This patch consists of four types of marine debris and occupies 7-9 million square miles of the ocean. At the moment there are two garbage patches at the North Pacific Gyre; the Western Garbage Patch, which is strongly believed that 70% of the plastic ends in the seafloor, and the Eastern garbage patch, which influences mostly the Californian and Alaskan coastlines (Witt, 2014).

What is more, garbage patches have serious environmental and health impacts on both animals and humans. Primarily, they are considered hazardous both for marine wildlife and the environment itself. For instance, animals such as turtles and whales entangle themselves in marine debris or end up eating the plastics, mistaking them for other smaller organisms. Marine pollution through garbage patches starts by harming the very bottom of the ecosystem, i.e. the food chain, and later on it extends to atmospheric pollution.

This takes us to the second point mentioned previously, that there are serious health impacts to humans as well. As plastic debris is broken down into smaller pieces through photodegradation (i.e. breaking down via the sun), plastic molecules soak up toxins in the water and air as well. Therefore, humans living near the coastlines where garbage patches are located or even when they consume fish from the area are directly exposed to harmful toxins (lead and cadmium). For instance, plastic toxins such as health- bisphenol- A (BPA) found in plastic bottles that are

commonly thrown in the sea leads to hormonal disorders, resulting in various health issues. On another note, however, humans experience economic problems as well, as they try to come up with new solutions to deal with the issue and clear the garbage patches.



Cargo and Deep- Sea mining

Cargo and Shipping

A second approach to the topic of marine pollution regards cargo being dumped from ships traveling through seas and oceans, and of course deep-sea mining. It is needless to say that both factors have a serious impact on the environment and the malfunction of marine ecosystems around the world. To start with, when we discuss cargo, we refer to the goods and materials carried by ships from one port to another. After extensive research of environmentalists and specialists, it has been shown that “one of these ships, the length of around six football patches can produce the same amount of pollution as 50 million cars” in land (Piesing, 2018). This means that international shipping can produce billions of CO2 emissions released in the atmosphere, exceeding man- made emissions (Smith in Piesing, 2018). What is more, apart from CO2 emissions caused through shipping, cargo ships burn bunker fuel, which is extremely harmful for the sea and its ecosystem. This is mainly because this specific fuel is heavily toxic and does not evaporate into the atmosphere. As a result it travels along the ocean like oil, killing marine life inside the water, seabirds that often hunt fish as well as humans that live near coastlines and ports.

Furthermore, apart from the damage ships themselves and their construction causes to the environment, what is of utmost importance is that cargo transferred is often being dropped in oceans and seas, either as a result of a shipwreck or on purpose. According to a research project carried out by WWF in 2003, "around 6.1 billion tonnes of cargo was shipped by sea, covering a collective distance of over 6 kilometres" (WWF, 2018). Approximately 90% of all trading that happens between countries occurs through shipping across the oceans and seas. This leads to a constant release of waste, such as garbage or untreated sewage in the waters. As mentioned in the previous sections, many of these ships release their sewage outside the ports to avoid paying a greater tax, therefore polluting the waters. On the other hand, through these actions, air pollution occurs through the emission of dioxides (most importantly CO2 and sulphur dioxide), as well as nitrogen oxides that can damage marine life and disturb the function of the ecosystem. However, the problem with shipping is not caused only through transportation of cargo across the oceans, but in ports and shipping lanes as well. The more shipping lanes become congested, the more accidents and spills are caused (WWF, 2018).

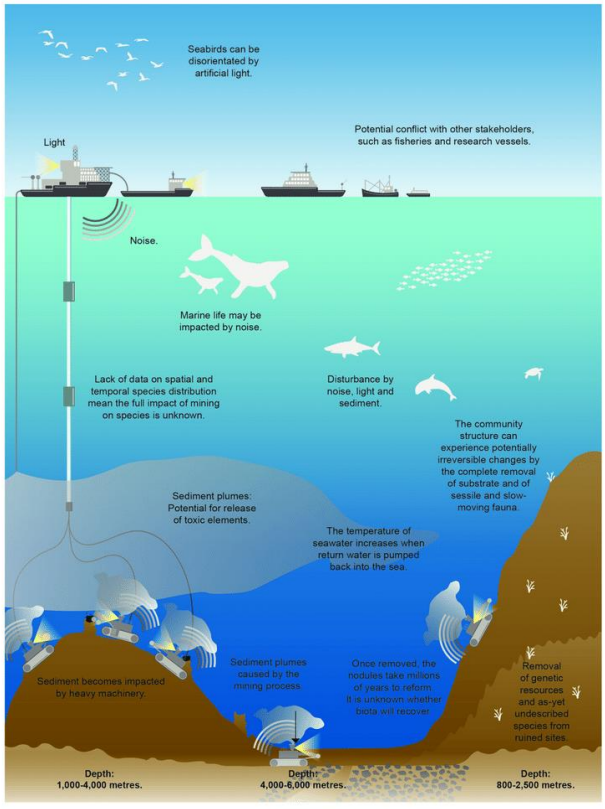
Deep Sea-mining

Having presented a variety of factors causing marine pollution, in this section of the study guide, we present a final but of utmost importance factor: deep sea-mining. By definition, deep sea-mining refers to the process whereby "polymetallic nodules or hydrothermal vents are mined by machine" (Doherty, 2018). Deep sea-mining is based on the notion that the seabed floor and all materials placed down there belong to humans, which was developed in the 1960s. During the past half century, there have been over 50 exploration contracts for undersea mining in international waters in order to extract materials of gold, silver, zinc, copper and cobalt.

The problems with deep sea-mining are mostly two namely ethical issues that emerge and the impact of this process on the environment. Primarily, ethical issues are based on the big question "Does the Seabed floor belong to mankind by national jurisdiction"? Proponents of this view argue that it belongs to ancestors and indigenous people, and therefore the materials on the seabed floor belong to the humans of today too. However, the problems are that mapping the ocean floor and releasing documents on what exists on the floor is a long term procedure that harms the environment to a great extent. From the very start, mapping the oceans requires the use of satellites and machines to be used in the sea so as to reach the floor and measure the landscape. In an expert's words, " It's an astounding feat of precision measurement, involving lasers to track the trajectory of the measuring satellite, calibrations with local gravity measurements made by ships, and inevitably quite a bit of math in processing the data" (Copley, 2014). Hence, in order to map the ocean floor and identify whether there is material that belongs to the mankind, there is a huge negative effect on the environment.

Why is it negative? This brings us to the second aspect of the influence of deep sea-mining mentioned at the start of this section, that it is the procedure followed that causes a negative effect on the environment. To start with, it has a negative effect on the biodiversity and marine life. The noise produced from the lasers and machines to extract the material, as well as the light, cause a distraction to whales and other fish, which as a result cause them to migrate to other parts of the ocean and abandon their natural habitat. For example, "hydrothermal vents act as a sink, sequestering carbon and methane" (Doherty, 2018). As a consequence, removal of useful fauna as well as the mineral-rich vents and their surrounds which are parts of marine life habitats may experience changes that influence organisms such as crustaceans, clams, slugs, anemones and other fish. However, these are only examples of what can happen to the biodiversity of marine environments through deep sea- mining but there is limited room to this paper so as to discuss everything.

On a final note, the impact of deep sea-mining reflects on the human environment as well. According to a review of The Harvard Environmental Law it has been mentioned that deep sea- mining disturb traditional fishing grounds, especially in the Pacific and "PNG villagers bordering the exploration site in the Bismarck sea have reported high incidence of dead fish washed ashore" (Doherty, 2018). Therefore, trying to extract material from the bottom of the sea influences negatively the economy of villagers whose leaving is fishing and trading.



Bloc Positions

Russia & China: The Northern Sea Route

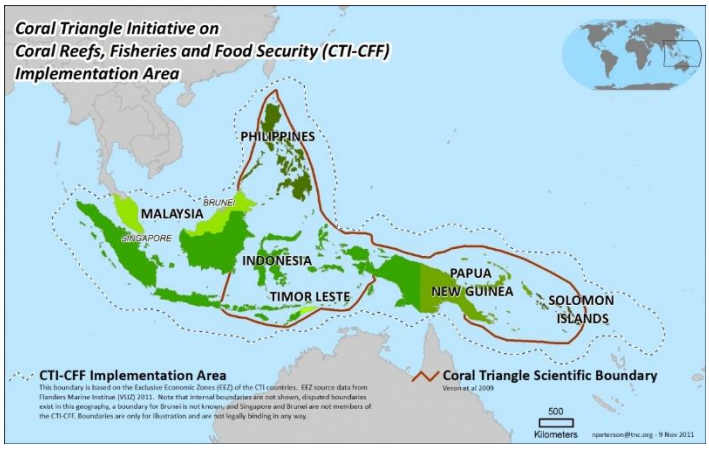
In the past decade, the increasing temperature in the arctic has opened up the possibility of navigating the Arctic Seas from Europe all the way to Asia. This summer of 2018, the largest cargo company in the world, the Danish-based Maersk, has sailed its maiden cargo voyage Venta Maersk along the icy waters from Vladivostok to Bremerhaven in Germany through this route called NEP/Northeastern Passage (NPR, 2018). The passage has been projected to save up to $100/TEU (twenty-foot equivalent unit, a cargo measurement) compared to the traditional Suez Canal route to Asia (Abdul Rahman et al., 2014)

As the route passes near mostly Russian Arctic waters, Russian authorities have been keen to keep track of the progress along this area. Both the Russian Ministry of River and Marine Transport, together with state-owned nuclear enterprise Rusatom has been taking in figures and reported that the region has experienced a nearly 100% surge in cargo transport for summer 2018 compared to the previous year - from 5.5 million tonnes to 9.5, despite the fact that the route is only navigable from July to October annually.

With the potential to cut costs and diversify their supply possibilities, China has also jumped to endorsing the potential of the opening up of the Arctic Sea. Having obtained permanent observer status in the Arctic Council back in 2013, the Chinese State Council Information Office released its first official Arctic policy white paper outlining a way towards an "Arctic Silk Road". The policy specified the potential of the NEP cutting over 20 days of shipping and the potential Russian LNG supply through the Yamal peninsula gas fields. At the same time, the Chinese Vice-Foreign Minister Kong Xuanyou has downplayed the possibility that Chinese efforts have veiled interests, such as "plundering resources or damaging the environment" (Forbes, 2018).

Though the economic benefits of this route might be seen as a potential, many have sounded an alarm that the pollution that this new cargo route brings will outweigh its cost benefit calculations, especially due to the fact that the route is opening up due to 2017 & 2018 having the two record-lows summer Arctic ice levels (NSIDC, 2018). A more extensive level of traffic might feed a cycle of increasing temperature warming. Additionally, some have suggested that the lack of legislation and oversight over this remote area might lead to various illegal fishing and unregulated resources extraction (Essallamy, 2008).

Coral Triangle Initiative & Pacific Ocean Islands



The Coral Triangle Initiative (CTI) is a meeting of 6 countries lying in the resource-rich Coral Triangle in the Pacific Ocean, initiated by Indonesia in 2004. 5 years after they expanded the initiative into Coral Reef, Fisheries and Food Security (CTI-CFF) domains, seeing the interconnectivity of the issues. Supported financially by the Asian Development Bank, CTI has also gained support by neighbouring Pacific Island nations such as Fiji, who presided over COP23 in Bonn (WWF, 2018). While the area is host to 76% of all coral species worldwide and its coasts are home to over 120 million people (WEF, 2018), they have lamented that they only receive 0.01% of global climate financing between 2010 and 2015 (Wright, 2018). Hence, in a debate regarding marine pollution these countries might want to push for a more concrete framework on financing and projects.

Conclusions – Questions a Resolution Must Answer

Whereas the issue of marine pollution itself is a wide topic to tackle, delegates might want to focus in on several topics that has been mentioned in the discussion above. Therefore, a COP decision (final resolution) in CUIMUN XXIV might want to address the following points:

1. Would there be any limits and monitoring frameworks set to oversee the levels of industrial pollution dumped into the sea via rivers?
2. How does the international community recognize responsibility sharing in regards to the effects of deep sea mining/drilling and oil spills, especially when it happens outside territorial waters but affects coastal residents and the marine habitat?
3. Would there be a concerted international effort to tackle the garbage patch problem before it aggravates itself further?
4. How to minimize the effects of cargo transport and marine traffic to the environment? How will new shipping routes and technology contribute and will there be any limits and monitoring frameworks to be set?
5. How will such limits, monitoring frameworks, and projects be financed, as having seen through the coral reef issue, that marine habitat issues has so far been neglected financially in comparison to other climate financing projects?

References:

[1] Copley, J. (2014). Mapping the deep, and the real story behind the "95% unexplored oceans." [Blog] *Exploring our Oceans*. Available at: http://moocs.southampton.ac.uk/oceans/2014/10/04/mapping-the-deep-and-the-real-story-behind-the-95-unexplored-oceans/ [Accessed 31 Aug. 2018].

[2] Doherty, B. (2018). *Deep-sea mining possibly as damaging as land mining, lawyers say*. [online] The Guardian. Available at: https://www.theguardian.com/environment/2018/apr/18/deep-sea-mining-possibly-as-damaging-as-land-mining-lawyers-say [Accessed 29 Aug. 2018].

[3] Oil in the sea III. (2003). Washington, D.C.: National Academy Press.

[4] Piesing, M. (2018). *Cargo ships are the world's worst polluters, so how can they be made to go green?*. [online] inews. Available at: https://inews.co.uk/news/long-reads/cargo-container-shipping-carbon-pollution/ [Accessed 22 Aug. 2018].

[5] Vakalevu, V. (2017). *Fighting Ocean Pollution and Climate Change Is a Two-Front War | UNFCCC*. [online] Unfccc.int. Available at: https://unfccc.int/news/fighting-ocean-pollution-and-climate-change-is-a-two-front-war [Accessed 29 Aug. 2018].

[6] Wiese, F. (2002). *Seabirds and Atlantic Canada's ship-source oil pollution*. 1st ed. Toronto, Canada: World Wildlife Fund Canada.

[7] Wilkins, J. (2004). U.S. NAVY SALVAGE REPORT USS MISSISSINEWA OIL REMOVAL OPERATIONS. [online] Washington: U.S Navy. Available at: http://www.navsea.navy.mil/Portals/103/Documents/SUPSALV/SalvageReports/Mississinewa%20Oil%20Removal%20Operations.pdf [Accessed 4 Aug. 2018].

[8] Witt, A. (2014). *Giant garbage patch grows in Pacific Ocean*. [online] MSNBC.com. Available at: https://www.msnbc.com/weekends-with-alex-witt/watch/giant-garbage-patch-grows-in-pacific-ocean-321401923515 [Accessed 4 Aug. 2018].

[9] Wwf.panda.org. (2018). *Shipping problems: Steady release of oil and chemicals*. [online] Available at: http://wwf.panda.org/our_work/oceans/problems/shipping/oil_release/ [Accessed 2 Aug. 2018].

[10] Abdul Rahman et al. (2014). *Effect of the Northern Sea Route Opening to the Shipping Activities at Malacca Straits* . Available at: https://www.sciencedirect.com/science/article/pii/S2405535214000096

[11] NPR (2018). *World's Largest Shipping Company Heads Into Arctic As Global Warming Opens The Way* [online]. Available at: https://www.npr.org/2018/08/22/640679831/worlds-largest-shipping-company-heads-into-arctic-as-global-warming-opens-the-wa

[12] Forbes (2018). *Global Warming Opens Arctic Passage For Container Ships* [online]. Available at: https://www.forbes.com/sites/niallmccarthy/2018/08/30/global-warming-opens-arctic-passage-for-container-ships-infographic/#2ff579cc6c2b

[13] Gosnell, R. (2018). *Caution in the High North: Geopolitcal and Economic Challenges of the Arctic Maritime Environment.* [online] Available at: https://warontherocks.com/2018/06/caution-in-the-high-north-geopolitical-and-economic-challenges-of-the-arctic-maritime-environment/

[14] Essallamy, M. (2008). *The Arctic sea routes: marine environmental impacts on effect of the climate change and opening of the passages for international shipping traffic.* Available at: https://commons.wmu.se/cgi/viewcontent.cgi?article=1259&context=all_dissertations

[15] World Economic Forum - Cheng, S. (2018) *What is the Coral Triangle?* [online]. Available at: https://europeansting.com/2018/09/14/what-is-the-coral-triangle/

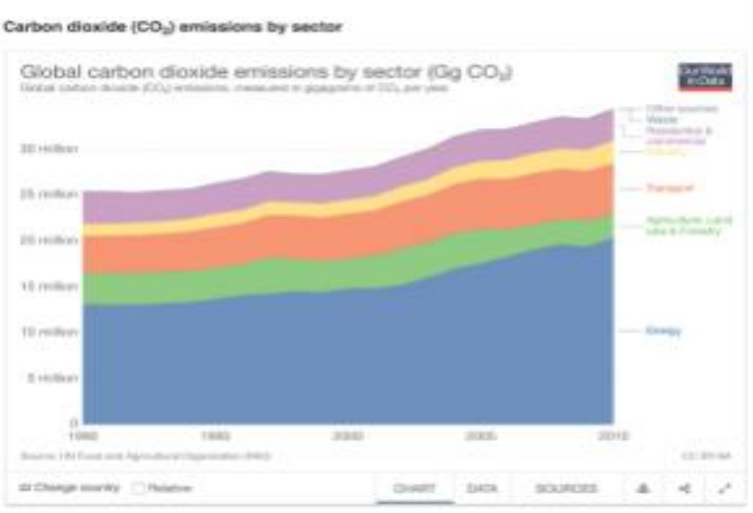
[16] Wright, H. (2018). *Financing Climate Resilience: Financing Gaps, Innovative Approaches and Instruments.* Available at: https://www.climateinvestmentfunds.org/sites/cif_enc/files/plenary_and_dialogue_3.pdf

[17] WWF (2018). *New recognition, new collaborations kick off the International Year of the Reef.* [online]. Available at: http://wwf.panda.org/?324995/New-recognition-new-collaborations-kick-off-the-International-Year-of-the-Reef

Topic B: Low Carbon electricity generation in developing countries

Introduction

The main goal of the UNFCCC is to reduce or limit the emissions of greenhouse gases in the atmosphere, and manage the impact of global warming. In this regard, it is the most successful international agreement so far, with every UN member nation being party to the treaty except the United States of America, which is due to leave in 2020 (Friedman 2017). In the context of electricity generation, the reduction usually focuses on carbon dioxide (CO_2) emissions that occur when fossil fuels like oil, coal or (to a lesser extent) gas are burned. Global electricity generation and heating (which are sometimes combined) account for a quarter of total CO_2 emissions, making this one of the most relevant sectors, above e.g. transportation (14%) or industry (24%) (US EPA 2018). We see a trend in developed nations that electricity demand is declining or remains flat and CO_2 emissions are declining. However, for developed nations like the United States of America, Electricity generation alone is still responsible for a large share of overall CO2 Emissions (see US EPA 2 2018). Developing nations (all countries not listed in Annex I of the UN Framework Convention on Climate Change (UNFCCC 2018) still face an increase in demand and production not expected to end soon. Since developing nations often and understandably prioritize economic development, as it is allowed according to the Paris Agreement, this demand is met with cheap ways to generate electricity, e.g. coal powered plants. Several approaches for decentralized use of renewable technology or large-scale solar power plants have been proposed. However, the increase in CO_2 emissions from developing countries does more than offset the savings of the developed nation, thereby jeopardizing the overall goal of limiting global warming to 2C° in contrast to pre-industrial levels (Rapier 2018). In the context of the Paris Agreement, the need to support developing countries has been recognized, yet the concrete steps on how to achieve this have been left open. The focus of this committee should therefore be to find viable recommendations for developing countries to ensure energy supply for growth without further burdening the climate, and whilst limiting the emissions as much as possible.



Source: Our World in Data 2018

Timeline

1988: The Intergovernmental Panel on Climate Change (IPCC) is formed by the United Nations Development Program and World Meteorological organization to provide a scientific assessment on a changing climate.

1990: Discussions in the United Nations on a Framework Convention to address climate change begin.

1994: The UNFCCC enters into force after receiving the 50th ratification.

1995: The first Conference of the Parties (COP) 1 takes place in Berlin.

1997: The Kyoto Protocol is formally adopted in December at COP 3, which focuses primarily aims to set binding targets for emission reduction for developed countries.

2005: The Kyoto Protocol enters into Force with 55 ratifications. In However this is done without the support of most developed nations.

2012: At COP 18 the Doha Amendment is adopted as an amendment to the Kyoto Protocol. However, the Amendment has yet to receive sufficient support from nations.

2015: COP 21 is held in December in Paris, France, leading to the historic Paris Agreement.

2017: The United States of America, responsible 15% of global CO_2 emissions, decide to withdraw from the Paris Agreement with effect of 4. November 2020.

2017: The 23rd - and latest to date - COP is held in Bonn, Germany.

Discussion

The UNFCCC and Paris Climate Agreement

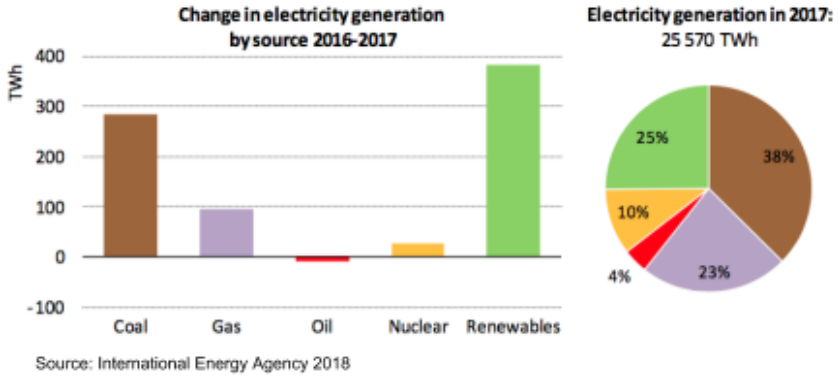
The UNFCCC was founded in 1992 and has hosted international conferences of its parties (COP) since 1995. The mechanisms established at these conferences are the international response to address the manifold dangers of global warming caused by the release of greenhouse gases by human activity. The first landmark Agreement was the Kyoto protocol in 1997, which failed to gain the necessary support to be effective. Thus, the relevant result of the UNFCCC that should serve as the basis for the discussion is the Paris Agreement, that was negotiated in December 2015. It is signed by all member states of the UNFCCC, the latest being Syria (Friedman 2017).

For this topic, the spirit of the Agreement needs to be understood. Its goal is to limit global warming to “well below 2°C above pre-industrial levels” while highlighting the different national circumstances to be considered. The primary mechanism includes individual contributions for each country. The parties are grouped according to the UNFCCC by level of development in developed nations (Annex I) who have been part of the OECD in 1992, Developed Nations that should contribute to financing emission reduction activities (Annex II),

developing countries who should receive support (non-Annex I), and Least Developed Countries (LDCs) (UNFCCC 2018). While developed nations should reduce their greenhouse gas emissions, it is recognized under Article 4 that developing nations might still need to increase their output to improve prosperity and eradicate poverty. Under that provision, all measures by developing countries should be supported by the contributions of developed countries.

Since the transformation to, or establishment of, a low carbon electricity sector requires advanced technologies, the provisions made with that regard under Article 10 are especially relevant. Article 10 is concerned with the "Technology Mechanism" that should encourage the development and sharing of technologies aiding the goals of the Agreement, specifically considering the provision of support to developing countries. Furthermore, these technologies are usually still more expensive than conventional ways of energy generation. Since this is the case, Article 9 about the Financial Mechanism comes into play. Article 9 lays out a mechanism for the provision of financial resources by developed nations, and is very relevant to enable the implementation of these technologies. It is recognized that developing nations require assistance to do so if they should contribute to mitigate climate change.

Current Trends in Demand & Supply



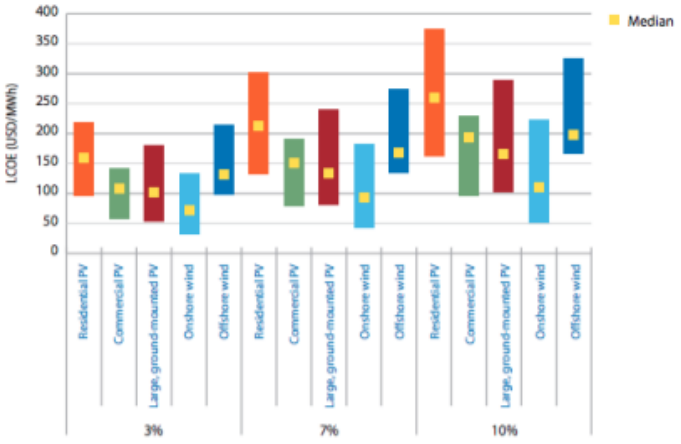
Source: International Energy Agency 2018

The demand for electricity is currently growing faster than the overall demand for energy. Energy demand remains closely associated to economic growth, often increasing in sync. However, sometimes electricity demand even surpasses economic growth. Accordingly 80% of growth in demand happens in Asia, mostly India and China (International Energy Agency 2018).

It should, however, be noted, that installed capacity in low carbon generation does not equal a steady supply, especially for renewable energies that depend on environmental factors like the sun, wind or waves. Thus, a huge gap between installed capacity and actual utilization exists (Exxon Mobil 2012). This means that to replace existing electricity generation with a low carbon alternative, an extremely large scale deployment is necessary (Myhrvold & Caldeira 2012).

Electricity Generation Costs

The projected costs of electricity generation vary widely. While in 2015 the IEA saw a huge gap in cost effectiveness (see Varro et al. 2015), other reports like Lazard (Lazard 2017) saw some low carbon technologies, and even renewables, as competitive. This development can be traced to the recent drop in costs for solar power and, to a lesser extent, wind power generation. However, some differences remain obvious, such as the relative cost-effectiveness of nuclear power and wind energy.



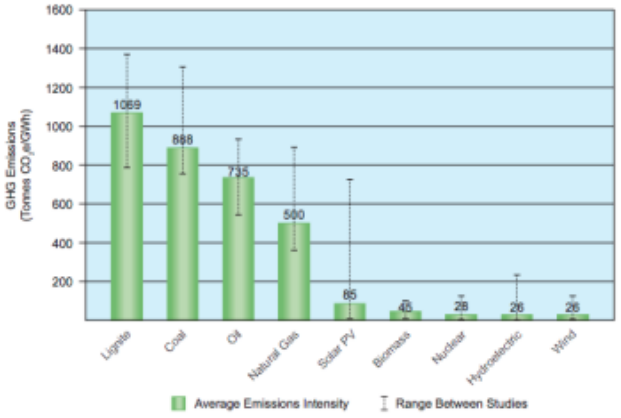
Cost Effectiveness of renewable energy sources. (source: Varro, L., & Ha, J. 2015)

Low Carbon electricity generation

While all forms of energy generation result in carbon emissions to the atmosphere over their lifecycle, there are significant differences depending on the form of electricity generation. Especially during the construction and installation process, the environmental costs for low carbon power plants can actually surpass the environmental costs of installing conventional capacity. The distinction between low carbon and high carbon electricity generation is whether the generation itself burns fuel that releases CO2 to the atmosphere, based on the whole lifetime emissions of a plant. Therefore, High Carbon Plants are oil-, gas-, and especially coal fired power plants. On the other hand, low carbon technologies include solar and wind power, hydropower, geothermal power and nuclear power.

Low Carbon vs. Renewable energy sources

It should be noted that low carbon does not equal renewable, even though it often overlaps. Especially nuclear power plants obviously do not use a renewable energy source, but have a very low carbon footprint.



Source: World Nuclear Association 2011

Solar power

Solar power can be used in several ways for electricity generation. Photovoltaics directly produce energy, though the scale of deployment and number of panels can vary widely. The costs of photovoltaics have fallen by 2/3rds since 2010. Thermal power plants on the other hand and indirectly convert solar energy to electricity by concentrating light and using the resulting heat to power conventional steam turbines. These facilities are usually quite large, due to the number of mirrors required to focus enough energy on a small area for the required heat generation. The power grids in developing nations or LDCs are often not fully developed, making the smaller scale renewables like photovoltaics a valuable addition.

Wind Power

With wind power generation, the major distinction is done on-shore or off-shore. It is mostly deployed in coastal or mountainous areas, with the largest installations in Europe and China (International Energy Agency 2018).

Hydroelectric power

Hydroelectric power plants are one of the oldest sources of electricity and have been used as a power supply for centuries. When it comes to their modern use, hydroelectric is the main source of low carbon electricity, accounting for 65% of the total in 2017. However, the construction of dams is sometimes highly controversial for its ecological impact (see Wheeling 2018) or their impact on regional water supply. Furthermore, the huge investment costs for construction and long construction times make these projects only viable for large scale deployment. Other means to harness hydrological energy, such as tidal wave generators, are still in development and have not yet seen wide deployment.

Nuclear Power

While Nuclear Power has a relatively low carbon footprint (See World Nuclear Organization 2011) the solution brings other problems with it, mainly the risks of catastrophic accidents and the unsolved question of long-term storage of radioactive waste. These dangers have limited the proliferation of nuclear energy (Lee et al. 2017). However, while the use in developed nations recedes, developing nations have planned to build dozens of reactors in the future.

Large Scale deployment of Low Carbon Electricity Generation

To have a notable impact on climate change, the current pace and scale of deploying low carbon technologies must be enhanced (Jezard 2018). As discussed, that would require the application of low- instead of high-carbon technologies to developing nations. The Low-Carbon technologies with the most large-scale deployment are old technologies like nuclear and hydroelectric power plants. There are currently 57 Nuclear Reactors in construction, most of them in Asia (40). Furthermore, the construction of large offshore wind parks and solar farms has increased in recent years. Solar farms are particularly interesting for African countries, due to the higher effectiveness in areas with lots of unobstructed sunshine like Morocco (World Economic Forum 2018). This advantage in location gave rise to the idea to export solar energy to Europe in the DESERTEC scheme, potentially supplying energy to millions of homes (Casey 2018).

Bloc Positions

EU & Africa

While the European Union has been in the forefront of the worldwide effort to generate renewable energies, Africa has long been the test-ground for small-scale SME and grassroot community efforts in generating alternative energies - with not as much national-scale initiatives and policies compared to other parts of the globe. Seeing that multinational companies from EU member states, especially Western European countries, have been extracting natural resources from lucrative parts of Africa, there has been a floating discussion on activating a carbon credit/trading system on renewable energies to offset the pollution costs of extracting oil and other minerals, such as the Emission Trading System/ETS (D'Vinci, 2018). However, some have

deemed ETS and other proposals as inefficient (Institute for Security Studies, 2011). In the past couple of years, African nations have also started to band together to establish their own financing and infrastructure building projects and facilities. One of these includes African Union's effort to attract over $20 Billion by 2020 on large-scale renewable energy projects (UNFCCC, 2015), in which the AU seeks diversified funding sources such as their own African Development Bank, the Green Climate Fund and the World Bank.

BRICS - Brazil-Russia-India-China-South Africa

Emerging economies have been known in the past decade to be in the list of the largest carbon polluters. China in particular, being the largest CO_2 emitter in the world (IEA, 2015), has fought for the Kyoto Protocol distinction of responsibilities between developing and developed countries to be maintained in COP21 talks on the Paris Agreement together with India against the USA's propositions of imposing emission limits based on 1,5^{o}degrees increase target. This was also backed by other industrialized countries to separate responsibilities of less prosperous developing countries and the upcoming emerging economies (Zhang, 2016).

In this light, the emerging economies of BRICS have tried to show the international community that, despite the emissions, they are also putting efforts into renewable energy, including through their own initiative of New Development Bank/NDB, set up in 2014 to provide reliable financing and investment for large-scale renewable energy projects and set goals for the BRICS countries themselves (Lempriere, 2017). Target-wise however, BRICS are still lacking $51 billion annually for their investment targets and are trying to attract private investment through a blended finance approach. This approach hopes to ensure that any public funds or multilateral bank investment catalyze private investments in greater numbers (Sharda, 2016). However, even though amount-wise renewable energy investments in developing countries have now surpassed developed economies (REN21, 2016) domestic-wise only Brazil has its majority energy source share in renewable energies, reaching over 70% in 2014 (Kurtkoti, 2014).

Conclusions - Questions a Resolution Must Answer

1. How will the international community through COP21 ensure a steady renewable energy stream to try keep up with the growing demand in developing economies especially from electricity, or at the very least take it as an opportunity to fill in demands that oil and other non-renewable sources could not?
2. What channels and approaches of financing should be taken to ensure enough renewable energy investments especially in developing countries, where private investments are deemed riskier than in developed economies?
3. Which level and scope of international coordination should be set as a target or model for these large-scale renewable energy deployment especially when it comes to cross-border regional infrastructure projects?

References:

Casey, T. (2018). The Desertec Sahara Solar Dream Didn't Die After All — It's Baaaack… [online] Available at: https://cleantechnica.com/2017/08/11/desertec-sahara-solar-dream-didnt-die-baaaack/ [Accessed 9 Sep. 2018].

ExxonMobil. (2015) "The Outlook of Energy: A View to 2040, 2012."

Friedman, L. (2017). Syria Joins Paris Climate Act. New York TImes. Avaliable at: https://www.nytimes.com/2017/11/07/climate/syria-joins-paris-agreement.html

International Energy Agency. (2018). Global Energy & CO2 Status Report 2017. Available at: https://www.iea.org/publications/freepublications/publication/GECO2017.pdf

Jezard, A. (2018). Morocco is building a giant thermosolar farm in the Sahara Desert. Retrieved from https://www.weforum.org/agenda/2018/05/morocco-is-building-a-solar-farm-as-big-as-paris-in-the-sahara-desert/

Lazard, N. (2017). Lazard's Levelized Cost of Energy Analysis–Version 11.0.
Lee, S., Kim, M., & Lee, J. (2017). Analyzing the Impact of Nuclear Power on CO2 Emissions. Sustainability, 9(8), 1428

Myhrvold, N. P., & Caldeira, K. (2012). Greenhouse gases, climate change and the transition from coal to low-carbon electricity. Environmental Research Letters, 7(1), 014019.

OECD Nuclear Energy Agency. (2015). Projected costs of generating electricity 2015 Edition. Avaliable at: https://www.oecd-nea.org/ndd/pubs/2015/7057-proj-costs-electricity-2015.pdf

Our World in Data. (2018). CO_2 and other Greenhouse Gas Emissions. [online] Available at: https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions [Accessed 2 Sep. 2018].

Rapier, R. (2018). Global Carbon Dioxide Emissions Set New Record. Avaliable at: https://www.forbes.com/sites/rrapier/2018/06/29/global-carbon-dioxide-emissions-set-new-record/#71b7daa643a9

UNFCCC. (2018). Parties & Observers. [Online] Available at: https://unfccc.int/parties-observers

US EPA 2. (2018). *Sources of Greenhouse Gas Emissions* | US EPA. [online] Available at: https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions [Accessed 1 Sep. 2018].

US EPA. (2018). *Global Greenhouse Gas Emissions Data* | US EPA. [online] Available at: https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data [Accessed 30 Aug. 2018].

Varro, L., & Ha, J. (2015). *Projected Costs of Generating Electricity–2015 Edition*. Paris, France. Avaliable at: https://www.oecd-nea.org/ndd/pubs/2015/7057-proj-costs-electricity-2015.pdf

Wheeling, K. (2018). *Big Dams Have Big Drawbacks*. [online] Pacific Standard. Available at: https://psmag.com/environment/its-just-one-dam-thing-after-another [Accessed 1 Sep. 2018].

World Economic Forum. (2018). *Morocco is building a giant thermosolar farm in the Sahara Desert.* [online] Available at: https://www.weforum.org/agenda/2018/05/morocco-is-building-a-solar-farm-as-big-as-paris-in-the-sahara-desert/ [Accessed 8 Sep. 2018].

World Nuclear Association. (2011). *Comparison of lifecycle greenhouse gas emissions of various electricity generation sources*. WNA Report, London.

DVinci Energy (2018). *The Future of Renewable Energy in Africa*. [online] Available at: https://dvinci.co/the-future-of-renewable-energy-in-africa/

Institute for Security Studies (2011). *Carbon Trading in Africa - a Critical Review*. Available at: https://issafrica.s3.amazonaws.com/site/uploads/Mono184.pdf

UNFCCC (2015). *Africa Renewable Energy Initiative - Increasing Renewable Energy Capacity on the African Continent* [online]. Available at: https://unfccc.int/news/africa-renewable-energy-initiative-increasing-renewable-energy-capacity-on-the-african-continent

Sonntag-O'Brien, V. & Usher, E. (2004). *Mobilising Finance for Renewable Energies.* . Available at: http://siteresources.worldbank.org/EXTRENENERGYTK/Resources/5138246-1237906527727/5950705-1239134575003/mobfin0mfretb003.pdf

Zhang, Z. (2016) *Are China's climate commitments in a post-Paris agreement sufficiently ambitious?*. Australian National University. Available at : https://ccep.crawford.anu.edu.au/files/uploads/ccep_crawford_anu_edu_au/2016-09/ccep1607.pdf

Lempriere, M. (2017) *On target: the New Development Bank and BRICS renewable goals* [online] . Available at : https://www.power-technology.com/features/featureon-target-the-new-development-bank-and-brics-renewable-goals-5736468/

Sharda, J. (2016). *New Development Bank and Role in BRICS Renewable Energy Targets*. IEEFA. Available at: http://ieefa.org/wp-content/uploads/2016/10/New-Development-Bank-and-Role-in-BRICS-Renewable-Energy-Targets-October-2016.pdf

REN21 (2016). *A Record Breaking Year for Renewable Energy: New Installations, Policy Targets, Investment and Jobs*. [online] Available at: http://www.ren21.net/wp-content/uploads/2016/05/2016_GSR-press-release_ENGLISH.pdf