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COVID-19 AND THE ENVIRONMENT: THE ISSUES AND ADVERSE EFFECTS TO WETLANDS GLOBALLY

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Abstract:

The Covid-19 pandemic causes chaotic situations globally. Many cities around the world are facing improved better fresh air and experiencing cooler weather due to reduced carbon emission which normally raises temperatures. The environment, as a whole, experience the same. In this paper, the author's emphasis on the visibility, the effects of the pandemic on wetlands globally. There are a few aspects that will be looked at, for example to wetlands effect specifically, to the wildlife, to humans or wetlands, and the effect on the environment generally. This is a conceptual paper. The data collected are from the internet and books and also from some observations. This study adopted a doctrinal analysis, where legal research forms as part of analytical study of existing laws, related cases, and authoritative materials as a whole, on some specific matter. It works as knowledge-building research in the legal field. For example, the Ganga River in India is so clean that reports suggest that it is fit for drinking. The Yamuna River is showing improved water quality and quantity. This is the first time in years that its surface is not covered in plastic and froth, but reflects the sky and scenic beauty around. Wetlands are the most vulnerable ecosystems, including freshwater rivers, lakes, paddies, marshes and peatlands, and saltwater estuaries, mangroves, coral reefs, seagrass beds, and lagoons. 87% of the wetlands globally were lost over the past 300 years. They provide an estimated $47 trillion worth of services annually and a livelihood for one billion people. The issue is on the Covid-19 pandemic and

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how seriously it effects the livelihood of all species including humans in wetlands areas.

Keywords:

Covid-19, Environment, Wetlands, Adverse Effects, Globally

Introduction

At the end of 2019, began in Wuhan, the capital of Hubei province in China, there was an exceptionally high number of pneumonia cases of unusual characteristics is a novel infectious coronavirus disease. It was found that the causative agent of the outbreak was identified as beta-coronavirus with a genomic sequence that was closely related to the severe acute respiratory syndrome (SARS) coronavirus from 2003 earning the new virus the name SARS-CoV-2.[1] This disease is also known as COVID-19, has transformed massively from a regional outbreak in China into a complex global pandemic, which resulted in almost 10 million cases worldwide within the first five months.[2] The outbreak has spread to more than 216 countries, regions and territories across the world, yielding more than 115 million infected cases and 2.54 million deaths globally as at 3rd March, 2021.[3]

There are many adverse impacts due to the outbreak and not only focusing on the economic and social, but to the environment as well, especially to the wetlands. The question here is whether the crisis following the COVID-19 be good for the environment?

Wetlands are one of the most vulnerable and most endangered ecosystems in the world, these include freshwater rivers, lakes, paddies, marshes and peatlands, and saltwater estuaries, mangroves, coral reefs, seagrass beds, and lagoons. For the past 300 years, we have lost 87% of the wetlands and 35% since 1970. Wetlands are disappearing at an alarming rate, faster than any other ecosystems, three times faster than forests. They vanished and brought with them the life within them. It is estimated that more than 25% of wetlands plants and animals, which comprise up to 40% of all the world's species are now at risk of extinction, and most of the stocks of the balance of the species are declining and disappearing rapidly.[4]

Economically, wetlands provide an estimated $47 trillion worth of services annually and about one billion people depend on this ecosystem for their livelihood.[5]

Essentially, wetlands clean and store water. By protecting these ecosystems, it can save lives. It can also saves money, by way of protecting a natural watershed providing clean water to

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[3]Covid-19alert. https://www.google.com/search?q=covid+cases+globally&oq=covid+cases+globally&aqs=chrome..69i57j0l6j0i390l3.5531j0j15&sourceid=chrome&ie=UTF-8. Accessed: 3rd March 2021.
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[5] Ibid.

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New York City, for example, eliminated the need for a $10 billion water-treatment plant that would have cost $100 million per year to run.[6]

Interestingly, wetlands are also a major source of nutrition, this include fish and rice – a staple food on which 3.5 billion people depend. In Senegal, the world's largest mangrove restoration programme shows how conserving and restoring wetlands can be a valuable strategy to tackle hunger and poverty. The restoration indicated to increased biodiversity; higher rice yields; and increased fish, oyster, and shrimp stocks. Together with improved food security, surplus catches continue to bring valuable income for villagers.

However, despite the above evidence, wetlands are largely discriminated in national and global policymaking. For example, the parties to the United Nations Convention on Biological Diversity will adopt a global roadmap to avoid mass species extinction and at the same time, redefining a future where humans genuinely live in harmony with nature. This is the symbioses that are needed between human and nature.

The Ramsar Convention on Wetlands is significant and commitments already exist to protect and better manage wetland biodiversity. With commitments from countries worldwide, solutions concerning biodiversity would assist in providing the impetus for the transformative action needed. Eventually, this will bring multiple international goals on climate change and sustainable development.

There is also positive impact of the pandemic, where there is appreciation for the nature. When lockdown has been implemented, it resulted in a widespread engagement with green and blue spaces which include parks, forests, lakes and rivers.

Objectives Of The Paper

The scope and objective of the study is to look at the various issues that envelope the wetlands habitats and those who are badly affected by the pandemic. The authors are sharing global sites which are badly affected as to indicate the seriousness of the issues. The research paper seeks to achieve its general objective of getting answers to how Covid-19 impacted to the environment and to all species as well. The main issue here is that what has happened to the environment since the outbreak of the pandemic? The sub-issues are referring to the impacts of the pandemic to a few categories of the ecological system.

Literature Review

Wetlands are areas covered with water, be it temporarily or permanently. The RAMSAR Convention has defined wetlands as "*wetlands are areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres."*[7]

In many parts of the world, where there was lockdown imposed, that caused many adverse effects to the environment. Lockdown had many significant effects on spread of Corona virus

[6] Ibid.
[7] Article 1, RAMSAR Convention, https://www.ramsar.org/sites/default/files/documents/library/current_convention_text_e.pdf.

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and Novel COVID-19.[8] Almost 99% of the world's polluted industrial areas were shut down and nearly six billion people globally stayed at home. This resulted in the reduction of environmental interference by people.[9] The quality of air, water and overall environment had improved a lot. For example, air is the most important constituent of the environment, and with the lockdowns, seems to improve the quality with the increase of CO2, CO, NxO, hydrocarbon, SO2, SO3 and other gases as well. Lockdowns caused the decrease of gases being emitted of 10% compared to the year before.[10]

According to a research done by Kanchan Bahukhandi et al,[11] air quality has a direct influence on people's health. According to the report by the World Health Organization (WHO) in 2016, nearly 8% of the total deaths occurring globally was caused by air pollution.[12] Blessings for the environment, worldwide lockdown has healed the planet and the environment by improving the environmental quality including water, air and noise pollution.

Water quality in the rivers also has improved significantly including Ganga and Yamuna rivers. Initially, both rivers were in bad shape, they have changed due to these reasons, where the demand for water has gone down as industries are not using the water, and since the industries ceased operations, they did not release any toxic effluents in the river bodies.[13] Interestingly, according to the water monitoring data of the Central Pollution Control Board (CPCB), the average water quality has changed to 27 points of the Ganga river and is now suitable for bathing and propagation of wildlife and fisheries.[14] Earlier, there was no way for people to conduct these activities of fisheries and livelihood, but because of lockdowns, now it seems to be possible.

The pandemic condition also contributed to the development of diverse species of flora and fauna to flourish and benefitted various ecosystems like water ecosystem. In one example, the Himalayan ecosystem has always be the pivot of several important medicinal herbs and shrubs, that give about 51 millions of people their source of living through farming.[15] According to Bushan et al,[16] the Himalayan has the significant hydropower potential and feed world's largest and significant rivers along with nourishing numerous perennial streams globally. It is significant as it the home to most of the glaciers on the Earth, it has the maximum surface fresh water on which world large population depends for its survival.[17] Animals are also free to roam

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[13] Nikhil Gangappa Mantur, *"Impact of COVID-19 on Environment."* Mukt Shabd Journal, vol. IX, Issue VI, June/2020. Accessed: 4th March 2021.
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compared to the situations before the outbreak of COVID-19, they were less stress, they came out and also wandered and roam freely during the lockdown period. With the reduction of the stress level, has caused improved breeding rate as well as greater endurance, this is a good sign for getting more birds and wildlife in the succeeding years.[18] According to Sehrish Manan et al,[19] with the pandemic, it showed a huge impact on the livelihood of wildlife. Previously, the anthropogenic noise normally disturbs the primary sensory systems of animals to communicate, to recognize the cues to avoid predators, to find mates and also further influence the habitat quality and animal population. With the strict measure of lockdown, have reduced the number of visitors in the national parks and also urban areas, thus, it has minimizing the human intervention in wildlife. However, the wildlife were badly affected as they cannot be neglected as the feeding of some animals greatly depends on human activities such as tourism.

Similarly, in cases involving local and global shipping, with the reduction of these activities have positively impact the aquatic life and marine ecosystem by minimizing the turbidity and murkiness of water that was caused by the high boat traffic.[20] Studies by Lokhandwala S et al,[21] showed the impact on COVID-19 on the quality of water surfaces and air during the lockdown and it has flourished even better before the pandemic started.

Methodology

This is a conceptual paper. The data collected are from the internet and books and also from some observations. This study adopted a doctrinal analysis, where legal research forms as part of analytical study of existing laws, related cases and authoritative materials as a whole, on some specific matter. It works as a knowledge building research in the legal field.

Significance

The significance of the study is to relate how pandemic changes the environment, whether to make it better or to worsen it. The answers to these issues play vital roles in providing ways on how to improve the livelihood of all.

Findings/Results

According to H.M.Abdul et al,[22] water quality can be classified and characterized by physical, chemical and biological parameter of water quality. Scientists and researchers have studied the water quality assessment in Himalayan river and also of Ganga, Yamuna, Bhagirithi, Bindal, Assan and Alaknanda Song.[23] Earlier, before the lockdown, it was found that the quality of river water deteriorates due to anthropogenic influences such as discharge of sewage waste, industrial effluents, atmospheric deposition of pollutants, agricultural runoff and also

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geochemical factors.[24] These factors made it unsuitable for drinking, industry and also agriculture purposes.[25] However, with the lockdown, it has improved the water quality of Himalayan river.[26] An example to this is, during lockdown, many industries and factories of Hardwar Industiral area, Sidcul, UdhamsinghNageretc were closed down. This has resulted in reduction of discharge of waste water in river bodies.[27] Another example is that the Himalayan region of Uttarakhand is popularly known for pilgrim and significantly famous for one of the attractive tourist places. Thousands of tourists and pilgrims visit Himalayan region but since the lockdown, all the tourism activities stopped and further improved the water quality of region, these is due to close down of hotels, ashrams, shops and also markets, these are the major source sewage effluent and waste in the river. Interestingly, with the closure of water sports activities, streamer and bathing were closed led to further improved water quality of Himalayan river.[28]

The water quality of these two significant rivers also show magnificent changes. The parameter such as TDA, alkalinity, calcium, magnesium, bicarbonate, *E. coli* form and Tital Coliform were reduced during lockdown period.[29]

There are also changes in aquatic species. Aquatic species varies from plants, animal and small living organism in marine. It also includes fresh water bodies. The threats to aquatic livelihood include water pollution, destruction of biodiversity and climate change. An example for this is algae, which have come up in many places as expressed by local people. In Mahanadi, Narmada, Ganga, Yamuna and Nagavali it was reported that there is an increase of aquatic life in Krishna (75%), Kaveri (70%), Gandak (75%), Godavari (80%) and Gomati (78%). The lockdown made the shutdown of industries on river banks and also decrease in river water pollution. There have been visible changes in aquatic life. Before the lockdown, these changes are not available despite measures taken to control the pollution and clean river.[30]

In Malacca, in one of the rivers, the water had turned clear, it was found that there was a recruitment and growth of Avicennia (a mangrove plant locally known as *Api-api*) seedlings in the patches of mangroves along Sungai Melaka, this could caused by the temporary stop in the operation of the river cruise and businesses.[31] Due to less boat traffic and tourist activities, Venice waters are becoming clearer during the Coronavirus lockdown of the city in March and April 2020.[32]

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[31] http://www.ukm.my/aldrie/pandemic-badly-affecting-nature-tourism-industry/
[32] Sorin Cheval, Cristian Mihai Adamescu, Teodoro Georgiadis, Mathew Herrnegger, Adrian Piticar and David R. Legates, *"Observed and Potential Impacts of the COVID-19 Pandemic on the Environment."* Int. J. Environ. Res. Public Health 2020, 17, 4140; doi: 10.3390/ijerog17114140.

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As for wildlife, as explained earlier, brought many blessings, for example, the Wildlife Institute of India, has published a new data through a platform known as "Lockdown Wildlife Tracker", the intention was to show easy wildlife movement in people reigned areas.[33] This platform has enable volunteers to document wildlife actions, to collect data and give the data to the research community to use and investigate. Other examples of wild animals in people-dominated areas such as coyotes and deer are seen in the USA, wild boars are spotted in Italy, peacocks are roaming in Bangor, others like goats are moving in Wales and beautiful insects take the opportunity to discover the plants in the UK.[34]

Nature has always been an inherent part of human civilization. The Sanskrit phrase, *Vasudhaiva Kutumbakam*, which is the fundamental of Indian culture and philosophy of life and it means 'the Earth is family', but sadly with the emergence of industrialization and urbanization, the roots of the culture are lost.[35] The Delhi Pollution Control Committee (DPCC) shows a report that in Delhi, compared to the pre-lockdown days, the river Yamuna has changed and is now cleaner by around 33 per cent.[36]

An interesting situation happened on March 12, where it was estimated that 541,000 sandhill cranes were found nestled along the Platte River Valley near Kearney, Nebraska. The birds continued to migrate along the Platte, representing about 80% of the world's sandhill crane population.

Similarly, in Malaysia, Air Pollutant Index (API) analysis conducted between March 1 and April 28 last year showed there was a 26% increase in API for the number of "clean" days since the Movement Control Order (MCO) came into force.[37] The lockdown clearly cleanse the environment slowly. From the Malaysian government side, the Environment and Water Ministry (KASA) realize that the pandemic is an opportunity to strengthen environmental governance and rebuild better policies in harmony with nature. KASA is exuberant in revising the Environmental Quality Act 1974 to better protect the environment. The ministry also push on the momentum of the positive effects of the lockdown by enhancing participatory environmental volunteerism. Previously, it was not even matter to some people, somehow with this pandemic, there are many activities done accordingly in dealing with saving the environment.[38]

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Until now, there are about have 348,551 participants in Rakan Alam Sekitar (RAS) and more people with interests on the environment have joined the ministry's National River Trails Squad. Hopefuly, by 2030, KASA intends to establish a stretch of 10,000km of river trails, which would be taken care of by the communities living in the vicinity of the rivers.[39]

There is also presence of migratory birds. This is a positive indicator of biodiversity and showed less human interference. Researches done showed that the presence of migratory bird has increased around rivers of Ganga, Yamuna, Mahanadi and Kaveri up to 100%. This also indicates that due to reduced pollutants as well as increase in the good health of river biodiversity and lockdown. With less human interference and reduction in tourism activities on river banks and other water bodies lead to tis increase in number of migratory birds. This is a positive impact to the healing of biodiversity, provided there is no human intervention.

According to World Wildlife Fund, forests cover more than 30% of the Earth's land surface and the non-ceasing growths in human population has led to deforestation for resources.[40] it could be link of deforestations and different types of diseases due to the birds, bat-borne viral outbreaks. Forests are therefore significant and there is a need to encourage afforestation as much as possible throughout the world.[41]

Other than that, beaches are also cleansed from human intervention.[42] Beaches provide services such as land, sand, recreation and also tourism which are critical for the survival of coastal communities and possess intrinsic values, they have to be protected from overexploitation. With human interference, they have caused many beaches in the world to be polluted due to their tourism and recreational activities. Lack of tourist caused cleaner beaches, for examples beaches in Acapulco (Mexico), Barcelona (Spain), or Salinas (Ecuador).[43]

Conclusion

To some people, the COVID-19 brings bad luck and total loss to the economic and the people's earnings. Many people around the world lost their job and had adverse impacts on them. Some believes COVID-19 has its blessings. With the lockdown, it has shown how effective this measure as it ceases almost all pollution, greener the earth, and flourish the environment. Somehow, the authors believe that there is always silver lining in dark clouds. The best remedy is to curb the spread of this pandemic wisely. The standard of procedures need to be adhered and not to be manipulated by some parties with different intentions.

These are some recommendations needed to be done in order to prevent and curb the pandemic from getting stronger.

Rivers are significant and they are source of water and a cradle for aquatic life. Rivers should be protected and not damaged with drainage for pollutants and waste material. The department

[39] ibid.
[40] Indranil Chakraborty, Prasenjit Maity, "COVID-19 outbreak: Migration, effects on society, global environment and prevention.". www. Elsevier.com/locate/scitotenv. https://doi.org/10.1016/j.scitotenv.2020.138882. Accessed: 1st March 2021.
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involved in protecting rivers should check and enforce the laws accordingly from time to time. River ecology is also fundamental factor for aquatic species to live, grow and sustain in the river. Without intervention and interference from humans, there will be no pollution, no waste dumping in the river. This will make the rivers cleaner and would be better for aquatic species and their livelihood. This should be the practise in the long run.

The state should also enforce stricter laws for polluters, the principle of "Polluter Pay" is becoming irrelevant is the level of pollution is becoming unbearable and has gone beyond control. No amount of compensation can restore the originality and the peacefulness of the aquatic lives should the pollutions go beyond control. All urban local bodies should also stop discharging domestic waste, which also include sewerage to the nearby river.

The pandemic has proven that even though humans are a superpower and have weapons that are able to destroy the whole world, but still if humans are messing with nature, it will destroy humans with the small virus with very common symptoms like cold and cough.

To answer this question of whether the crisis following the COVID-19 be good for the environment, is by looking at all possible answers and arguments with facts put forward in this paper. In the authors' opinion, the pandemic actually has its blessings to environment, where it curbs and detain humans from going out of their homes. The cleanliness and purity of tourist attractions seem to emerge compared to non-pandemic time. However, due to the economic issues and livelihood, life has to continue on and perhaps once the pandemic is over, it will be back to normal. Hopefully, the situations (the environment) should not be taken for granted and should be taken seriously like before. Some may find blessings, but others may be enveloped with many other issues pertaining to this pandemic.

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