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# Impact Assessment of Covid-19 Pandemic from Enviro-Legal Perspective: Misfortune or Opportunity

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## Abstract

*The COVID-19 pandemic has given time to the world community to revisit the developmental policies and evaluate the long term impacts of human activities on environment. The influence of COVID-19 is multisectoral, but this paper will try to analyse its specific positive and negative impacts on various components of the environment. The paper will also discuss present international legal framework dealing directly or indirectly with novel coronavirus-like situations and how they have proved to be ineffective in present times. For the purpose of better understanding of COVID-19's impact and how humans can mitigate or reduce the repercussions, the authors have divided the issue into deterministic and stochastic effects of this pandemic. The authors have tried to analyse this situation and present a holistic view of the issue in the light of environmental considerations.*

**Keywords:** COVID-19, Environment, Health, Pandemic, Wildlife Trade, Pollution.

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## BACKGROUND

The ongoing COVID-19 pandemic has once again exposed human vulnerability to viral diseases (whether natural or human induced). The virus that poses a great risk to our society has already killed thousands of people worldwide. The medical preparedness of the nations of the world, developed and still developing, is abysmal and it clearly indicates that in an age where humans are in search of extra-terrestrial life, we still lack the full competence to save life on earth. There is little doubt that after this pandemic

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sees the halt, we will definitely witness a new world, a world where humans will respect their surrounding environment more than ever, where a better level of hygiene will be maintained even in the developing countries, and the limited natural resources of the earth will be used sustainably. It is, therefore, unequivocally true considering the circumstantial change that the pandemic would create that in future human beings will respect the nature and its services even more and governments and corporates will also change their pattern of investment and expenditure. Hopefully, in future, human health will be the topmost priority in every nation and emergency medical preparedness for corona-like situations will be given due attention. By far, national security meant only sealing of the borders to maintain territorial integrity and for that development of nuclear weapons and procurement of high-tech weapons and ammunitions was believed to be more than enough. Now, this line of thought will also change and the world will try to prepare itself for the emerging challenges of the 21<sup>st</sup> century. The pandemic has affected almost all human endeavours and even the very environment is witnessing a turning point. This paper will try to analyse the changes brought by COVID-19 from environmental perspective and also the impact of environment on COVID-19-like pandemics.

## THE UNIVERSALITY OF COVID-19 PANDEMIC

Pandemics are global spread of infectious diseases due to human-animal, human-human or human-surface interaction.<sup>1</sup> Pandemics know no territorial boundaries and have the capability to cripple the entire socio-economic fabric of nations. Due to COVID-19, millions of people have already been affected worldwide and the numbers will go up as there are no signs of cessation of the disease in the near future. Nevertheless, it can't be said that the possible consequences of a pandemic were never discussed by the International community before COVID-19. At the international level, International Health Regulations, 1969<sup>2</sup> was adopted<sup>3</sup> by World Health Assembly, that provides guidance to WHO members on how to act and respond in case of outbreaks of pandemics.<sup>4</sup> Later on, in 2009, the UN

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1 Sara E. Davies, 'National Security and Pandemics', *UN Chronicle*, available at <[un.org/en/chronicle/article/national-security-and-pandemics](https://www.un.org/en/chronicle/article/national-security-and-pandemics)> (assessed 01 April 2020).

2 International Health Regulations (1969) adopted by the Twenty-second World Health Assembly in 1969 and amended by the Twenty-sixth World Health Assembly in 1973 and the Thirty-fourth World Health Assembly in 1981, available at <<https://www.who.int/csr/ihr/ihr1969.pdf>> (assessed 01 April 2020).

3 International Health Regulations, (2005) entered into force on June 15, 2007 available at <<https://apps.who.int/iris/bitstream/handle/10665/246107/9789241580496-eng.pdf?sequence=1>> (assessed 02 April 2020).

4 *Ibid.*

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General Assembly adopted a resolution on Global Health and Foreign Policy.<sup>5</sup> An analysis of these international documents makes it evident that pandemics have so far been studied only from human health perspective and in some cases, also with animal health, but their direct link with the environment has not yet been endorsed by the international community.

Further, pandemics have also been associated with national security concerns whereby nations are required to cooperate with each other and fight a pandemic on war footing.<sup>6</sup> In 2000, the UN Security Council Resolution 1308<sup>7</sup> addressed the role of the UN Security Council, the United Nations General Assembly (UNGA) and the United Nations Economic and Social Council (ECOSOC) in dealing with pandemics like HIV/AIDS. They considered the pandemics to be related to security concerns of a particular nation (African nations, in this case). The Security Council under this resolution requested member states to consider voluntary HIV/AIDS testing and counselling for troops to be deployed in peacekeeping operations.<sup>8</sup>

The UN Commission on Human Security (2003) gave the following definition of human security:

“To protect the vital core of all human lives in ways that enhance human freedoms and human fulfilment. Human security means protecting fundamental freedoms— freedoms that are the essence of life. It means protecting people from critical (severe) and pervasive (widespread) threats and situations. It means using processes that build on people’s strengths and aspirations. It means creating political, social, environmental, economic, military and cultural systems that together give people the building blocks of survival, livelihood and dignity.”<sup>9</sup>

From this we can settle that the COVID-19 pandemic is a vital health and security

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5 Global health and foreign policy (2009) A/63/33, available at <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2898916/>> (assessed 02 April 2020).

6 *Ibid.* at 9.

7 UN Security Council Resolution 1308 (2000) on the Responsibility of the Security Council in the Maintenance of International Peace and Security: HIV/AIDS and International Peace-keeping Operations adopted by the Security Council at its 4172nd meeting, on July 17, 2000, available at <[http://data.unaids.org/pub/basedocument/2000/20000717\\_un\\_sresolution\\_1308\\_en.pdf](http://data.unaids.org/pub/basedocument/2000/20000717_un_sresolution_1308_en.pdf)> (assessed 04 April 2020).

8 Security Council, adopting ‘Historic’ Resolution 1308 (2000) On HIV/AIDS, Calls for Pre-Deployment Testing, Counselling for Peacekeeping Personnel Press Release SC/6890, available at <<https://www.un.org/press/en/2000/20000717.sc6890.doc.html>> (assessed 04 April 2020).

9 Human Security Now, Commission on Human Security, New York (2003) 4 available at <<https://reliefweb.int/sites/reliefweb.int/files/resources/91BAEEDBA50C6907C1256D19006A9353-chs-security-may03.pdf>> (assessed 05 April 2020).

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issue at the global level.

### **THEORIES OF ORIGIN OF COVID-19: AMBIGUITY AND CONSPIRACY**

In theory, coronaviruses are defined as a group of enveloped, single-stranded RNA viruses that range from 60 to 220 nm in size. They have the ability to infect birds and mammals, including humans, and are transmitted through aerosols or the faecal-oral route.<sup>10</sup> The first impact of current novel coronavirus was witnessed in the Wuhan province of China where the virus killed several thousands and later spread to other parts of the world. China has asserted that the novel coronavirus is zoonotic, transferring from bats to humans just like SARS, MERS, Ebola, etc. While USA, on the other hand, alleged that corona is nothing but a lab-grown virus, created for the purpose of biological warfare. China, to counter this proposition, alleged that the virus actually came from one of the US military personnel who infected Chinese population and hence the military personnel is the possible patient zero in this case.<sup>11</sup> Whatever be the case, it can't be denied that novel coronavirus disease has had a huge impact on the environment despite the uncertainty of its origin.

### **PANDEMICS VIS-À-VIS ENVIRONMENT**

Although the impact of the coronavirus pandemic is being widely studied by the researchers largely from human health perspective, there is an equally important environmental angle to approach this issue as well. The pandemic has unprecedented effects on environment wherein the environment is both facilitating as well as controlling the spread and severity of COVID-19.

Any discussion on human health is incomplete without referring to other environmental components—wildlife, domestic animals, air, water, land, soil and various ecosystems. All these factors are so interdependent that damage to one will necessarily affect the other components in the chain and disturb the overall ecological balance. The emergence of COVID-19, Hanta virus, etc., are latest examples of the same. It can no more be denied that to save humans from infectious diseases, need for conservation of biodiversity has become imperative.

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10 Patricia M Gundy et. al, Survival of Coronavirus in water and wastewater, (2009) 1 FEB 10, 10-14.

11 'US army brought coronavirus pandemic to Wuhan: Chinese diplomat', *The Economic Times* (March 13, 2020) available at <<https://economictimes.indiatimes.com/news/defence/us-army-brought-coronavirus-epidemic-to-wuhan-chinese-diplomat/articleshow/74607344.cms?from=mdr>> (assessed 07 April 2020).

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To this end, various conferences have been organized from time to time establishing link between human health, pandemics and environment. On 29 September, 2004, the Wildlife Conservation Society organized a conference titled ‘One World, One Health, Building Interdisciplinary Bridges to Health in a globalized world’ at Rockefeller University resulting in what is popularly known as ‘*Manhattan Principles*’. The principles gave twelve recommendations to prevent epizootic/pandemic diseases in future.<sup>12</sup> The recommendations recognized the link between humans and other forms of life on earth, their inter-connectedness and inter-dependency.<sup>13</sup> It admitted that land and water use have a special bearing on human health. There is natural environmental resilience and ability of environment to prevent disease emergence and if we fail to respect the inter-relationship of humans and environment, then the diseases are bound to occur.<sup>14</sup> The principles recommended that human health and conservation efforts should go hand in hand.<sup>15</sup> We have to adopt holistic, adaptive, integrated and forward-looking approach to prevent such catastrophes. Steps have to be taken to monitor, control and mitigate emerging and re-emerging diseases.<sup>16</sup> The principles also recommended the reduction of wildlife trade to minimize risks of disease movement and cross specie transmission.<sup>17</sup>

In 2019, as a follow up of Manhattan Principles, *Berlin principles* also came into existence. It is an outcome of the ‘One Planet, One Health, One Future’ conference organized by the Wildlife Conversation Society and German Federal Foreign Office. The set of ten principles recognized that in a highly globalized world, in an age of transboundary impacts (Climate Change, Global Warming, marine degradation, species extinction, etc) any one nation or any one field of study is insufficient to deal with and reverse the environmental changes of present times. Therefore, to protect human health, sustainable use and conservation of biodiversity is the key. Climate Change and freshwater availability and accessibility have a special bearing on human health. All the stakeholders - government, NGOs, local inhabitants, indigenous people are required to participate in decision making on environment and health related issues, only then we could meet emerging global health challenges.<sup>18</sup>

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12 Conference Summary, One World, One Health: Building Interdisciplinary Bridges to Health in a Globalized World, The Rockefeller University, Caspary Auditorium (29 September 2004) available at <[http://www.oneworldonehealth.org/sept2004/owoh\\_sept04.html](http://www.oneworldonehealth.org/sept2004/owoh_sept04.html)> (assessed 06 April 2020).

13 Berlin principles, (2019) Recommendation 1.

14 Berlin principles, (2019) Recommendation 2.

15 Berlin principles, (2019) Recommendation 4.

16 Berlin principles, (2019) Recommendation 5,6.

17 Berlin principles, (2019) Recommendation 7,8.

18 The Berlin Principles on One Health, (2019) available at <<https://oneworldonehealth.wcs.org/About->

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The above principles have set a roadmap for nations across the world to prevent or at least reduce the impact of pandemics in future. Because of their quasi-legal nature, these principles have largely been ignored by nations; nevertheless, the time has come when these guiding truths should be transformed into hard international law instruments.

## IMPACT OF NOVEL CORONAVIRUS DISEASE ON ENVIRONMENT

The impact of COVID-19 on environment and vice-versa can be classified into two broad categories:

1. Deterministic effects
2. Stochastic effects

### Deterministic effects

The components of environment going to be directly affected by COVID-19 pandemic fall under this category. These include:

#### i. Air

There is a direct relation between COVID-19 and air pollution. Novel coronavirus is primarily a respiratory disease<sup>19</sup>, it severely affects normal functioning of lungs which is also leading to human fatalities. Air pollution, on the other hand, is like a slow poison, it slowly reduces a human being's respiratory efficiency and capability to remove viruses and bacteria entering into lungs so when a human body is attacked by viruses like SARS-CoV-2, it becomes more vulnerable and loses its ability to fight. Research shows that the areas of the world with high mortality due to COVID-19 are densely populated, highly polluted and poorly sanitized.<sup>20</sup>

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Us/Mission/The-2019-Berlin-Principles-on-One-Health.aspx>\_; See also, 'Global Health Leaders Issue Urgent Call for United Effort to Stop Diseases Threatening All Life on Earth', *WCSNewsroom*, (25 October, 2019) available at <<https://newsroom.wcs.org/News-Releases/articleType/ArticleView/articleId/13435/Global-Health-Leaders-Issue-Urgent-Call-for-United-Effort-to-Stop-Diseases-Threatening-All-Life-on-Earth.aspx>> (assessed 06 April 2020).

19 Chloé Geller, Mihayl Varbanov, and Raphaël E. Duval, 'Human Coronaviruses: Insights into Environmental Resistance and Its Influence on the Development of New Antiseptic Strategies', 11 *Viruses* 3044–3068 (2012) available at <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3509683/>> (assessed 10 April 2020).

20 Devra Davis, 'How Pollution Aggravates the Impact of Coronavirus', *US News*, (16 March, 2020) available at <<https://www.usnews.com/news/best-countries/articles/2020-03-16/commentary-pollution->

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Air pollution has emerged as one among the most pressing environmental challenges of present times. The biggest contributors towards air pollution are vehicular emissions, emissions of CO<sub>2</sub>, NO<sub>x</sub> and SO<sub>x</sub> like Green House Gases (GHGs) from industrial activities, aviation, mining and quarrying, etc. According to a report<sup>21</sup>, air pollution from fossil fuel burning alone causes 4.5 million premature deaths annually all around the world and costs around \$2.9 trillion per year (3.3 % of the world's GDP) with India alone losing around \$150 billion per year.<sup>22</sup> The problem is faced both by developed and developing economies alike but the developing economies like India and various African and Latin American nations are the most vulnerable due to higher population density, lack of advanced-green technology, over consumption and over-exploitation of resources. This fact is re-affirmed by World Air Quality Report, 2019 which highlighted that almost 21 Indian cities feature in 30 most polluted cities of the world.<sup>23</sup>

Air pollution is the trigger point of global climate crisis. Margaret Klein Salomon, co-founder of the environmental activist organization Climate Mobilization, has been maintaining this stance since a very long time, that to tackle climate crisis, we need to deal with it in the same way as we did World War II. Like WWII, climate crisis also requires deep cooperation and personal sacrifice.<sup>24</sup> Various international efforts like UNFCCC<sup>25</sup>, Kyoto Protocol<sup>26</sup>, Paris Agreement on Climate Change<sup>27</sup>, etc have been made from time to time to tackle the menace but nothing significant is achieved so far. What various international instruments, national legislations and budgetary support could not do, COVID-19's global lockdown has done.

Due to COVID-19, the entire world has undergone partial or complete lockdown. This lockdown extends from self-isolation to suspending of all economic activities like production, manufacturing, selling and buying of non-essential products and even services for that matter. As a consequence of which, the number of vehicles plying on road has

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in-italy-china-and-iran-worsens-the-coronavirus-impact> (assessed 12 April 2020).

21 'Toxic Air: The Price of Fossil Fuels', *Greenpeace* (2020) available at <<https://storage.googleapis.com/planet4-southeastasia-stateless/2020/02/21b480fa-toxic-air-report-110220.pdf>> (assessed 12 April 2020).

22 *Ibid.*

23 World Air Quality Report Region & City PM<sub>2.5</sub> Ranking, *IQAir* (2019) available at <<https://www.iqair.com/world-most-polluted-cities>> (assessed 11 April 2020).

24 Margaret Klein Salomon, 'Transform Yourself with Climate Truth Excerpt Published on Common Dreams', *The Climate Psychologist* (26 June, 2019) available at <<http://theclimatepsychologist.com/author/theclimatepsychologist/>> (assessed 10 April 2020).

25 United Nations Framework Convention on Climate Change (1992).

26 The Kyoto Protocol (1997) to UNFCCC.

27 Paris Agreement on Climate Change (2015).

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reduced drastically, the factories are closed and so are their emissions. There is also temporary suspension of aviation activities, both national and international, which accounted for almost 2.4 % of global CO<sub>2</sub> emissions.<sup>28</sup> These over-night changes have improved the health of humans and overall health of environment also.<sup>29</sup> The concentration of GHGs like NO<sub>x</sub>, CO<sub>2</sub>, etc has decreased substantially in the atmosphere during lockdown period globally.

## ii. Water

Sanitation and hygiene<sup>30</sup> have become the buzzwords during the entire coronavirus pandemic.<sup>31</sup> Both need water due to which the average per capita consumption of water has increased all over the world.<sup>32</sup> The much advertised 20-second hand wash requires nearly two litres per wash. Frequent handwash requires 15-20 litres of water per person. This means that a family of five would need 100 litres just for handwashing each day.<sup>33</sup> Already, major parts of the world are facing water scarcity and COVID-19's extra water requirements is going to cause unnecessary strain on this already rapidly depleting natural resource.

## iii. Wildlife

Coronaviruses are believed to have originated in bats, rodents, camels, cats, etc. They have the capability to pass from animals to humans due to their high mutation

28 Shanon Osaka, 'As coronavirus fears soar, Europe moves to ban wasteful 'ghost flights',' *GRIST* (11 March, 2020) available at <<https://grist.org/climate/as-coronavirus-fears-soar-europe-moves-to-ban-wasteful-ghost-flights/>> (assessed 20 April 2020).

29 Chelsea Harvey, 'How the Coronavirus Pandemic Is Affecting CO<sub>2</sub> Emissions', *E&E News* (12 March, 2020) available at <<https://www.scientificamerican.com/article/how-the-coronavirus-pandemic-is-affecting-co2-emissions/>> (assessed 20 April 2020); Jonathan Watts, 'Coronavirus could cause fall in global CO<sub>2</sub> emissions', *The Guardian* (10 March, 2020) available at <<https://www.theguardian.com/world/2020/mar/10/coronavirus-could-cause-fall-in-global-co2-emissions>> (assessed 21 April, 2020)

30 (assessed 10 April 2020). WHO guidelines on hand hygiene in health care settings, World Health Organization, (2009) available at <[https://apps.who.int/iris/bitstream/handle/10665/44102/9789241597906\\_eng.pdf?sequence=1&isAllowed=y](https://apps.who.int/iris/bitstream/handle/10665/44102/9789241597906_eng.pdf?sequence=1&isAllowed=y)> (assessed 13 April 2020).

31 'COVID-19: water and sanitation-related information', *UN Water* (2 April, 2020) available at <<https://www.unwater.org/covid-19-water-and-sanitation-related-information/>> (assessed 17 April, 2020).

32 'As Coronavirus Spreads: Hand Washing Raises Water Use to Unusually High Levels in Iran', *Financial Tribune* (29 February, 2020) available at <<https://financialtribune.com/articles/energy/102391/as-coronavirus-spreads-hand-washing-raises-water-use-to-unusually-high-levels>> (assessed 11 April 2020) Also see, Rasheed Kappan, 'Coronavirus drives up water use in outer Bengaluru', *Deccan Herald* (1 April, 2020). available at <<https://www.deccanherald.com/city/coronavirus-drives-up-water-use-in-outer-bengaluru-819822.html>> (assessed 10 April 2020).

33 Sunita Narain, 'Water in the age of coronavirus', *Down To Earth* (21 March, 2020) available at <<https://www.downtoearth.org.in/blog/water/water-in-the-age-of-coronavirus-69905>> (assessed 10 April 2020).

rates.<sup>34</sup> This mutation causes infectious zoonotic diseases which are often fatal in nature. Around one billion cases of human illness and millions of deaths occur annually from zoonoses.<sup>35</sup> They were the prime causes of previous outbreaks like Middle East Respiratory Syndrome (MERS), 2012 and Severe Acute Respiratory Syndrome (SARS), 2002 which are categorized as coronaviruses.<sup>36</sup> Wildlife Conservation Society estimated that globally around 60 percent of all infectious diseases reported annually are zoonotic in nature. They have been emerging and remerging in past decades and posed significant threat to health of humans, animals, environment and economy.<sup>37</sup> The WHO also endorsed these statistics and found that in the last decade only, almost 75 percent of new infectious diseases were zoonotic.<sup>38</sup>

In 2009, U.S. Agency for International Development (USAID) came up with Emerging Pandemic Threats (EPT) program with four components: PREDICT, RESPOND, IDENTIFY, And PREVENT. The PREDICT Program tries to discover life threatening contagious diseases among human and animals.<sup>39</sup> According to a study conducted by this program, around 4483 coronaviruses have been found in various African and Asian countries over a period of 10 years (2009-2019).<sup>40</sup> The PREDICT researchers have also estimated that there are more than one million unknown viruses and half of them have the ability to potentially affect humans.<sup>41</sup> Based on these premises, the international organizations like CITES, WWF, UNEP, etc are calling for ban on wildlife consumption and consequently overall ban on wildlife trade.

Wildlife trade in rare and endangered species (of both flora and fauna) happens across the world for medicinal purposes, luxury items and direct human consumption.

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34 Liz Kimbrough, 'Conservationists set the record straight on COVID-19's wildlife links', *Mongabay* (13 March, 2020) available at <<https://news.mongabay.com/2020/03/conservationists-set-the-record-straight-on-covid-19s-wildlife-links/>> (assessed 21 April, 2020).

35 Amanda Fine and Aili Kang, 'Emerging Zoonoses and the Risk Posed by Wildlife Markets', *Wildlife Conservation Society* (16 March, 2020) available at <<https://medium.com/@WCS/emerging-zoonoses-and-the-risk-posed-by-wildlife-markets-5689b7ba7ee2>> (assessed 11 April 2020).

36 *Ibid.*

37 *Ibid.*

38 A brief guide to emerging infectious diseases and zoonoses, WHO Regional Office for South Asia (2014).

39 USAID PREDICT Program, EcoHealth Alliance, available at <[ecohealthalliance.org/program/predict](https://ecohealthalliance.org/program/predict)> (assessed 11 April 2020).

40 Pandemic Preparedness for Global Health Security, *USAID Briefing*, (17 March, 2020) available at <<https://static1.squarespace.com/static/5c7d60a711f7845f734d4a73/t/5e95fb725309184f8a1e76b2/1586887590640/PREDICT+March+18+Data+Discussion.pdf>> (assessed 11 April 2020).

41 *Supra* note 42.

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To combat illegal wildlife trade, CITES<sup>42</sup> came into existence in 1973 which controls and manages wildlife trade in transboundary context but is of no use for trade within territorial limits of a particular nation. This trade brings humans and wild in close proximity with each other, as a consequence of which, humans are exposed to newer kinds of zoonotic diseases like SARS, MERS, Ebola, Swine Flu etc in recent times. With every passing year, the death toll due to these diseases is rising. The ongoing COVID-19 pandemic is also supposed to have emerged from wild animals sold openly in Chinese wet markets specifically from Huanan Seafood Wholesale Market in Wuhan. These infamous wet markets selling live wild animals largely for human consumption are considered to be reservoirs of potential disease-causing viruses in humans. Similar markets exist in other parts of the world like African Urban Bush Markets, Bushmeat market in Latin American, India, etc.

Wildlife trade alone is a multi-billion dollar industry in China.<sup>43</sup> Wildlife is considered as a rich source of protein by local people, giving them wide variety of options in their food choices, along with traditional medicinal properties. The wildlife is also traded outside national boundaries and has become an emerging market of expensive delicacies that is now attracting people high in the social ladder. COVID-19's outbreak attracted huge criticism for China's wet market practise calling for permanent ban on such markets. Taking stern action, the Chinese government passed an order titled "*Comprehensively Prohibiting the Illegal Trade of Wild Animals, Eliminating the Bad Habits of Wild Animal Consumption, and Protecting the Health and Safety of the People*"<sup>44</sup> (Hereinafter, the 2020 order) on February 24, 2020. This order increased punishment for activities like hunting, trading, eating in violation of Chinese wildlife law<sup>45</sup>. It prohibits consumption of 'terrestrial wildlife of important ecological, scientific or social value' and other terrestrial wildlife protected by the state, including terrestrial wildlife artificially bred or raised.<sup>46</sup> While consumption of aquatic wild animals and domestic livestock and poultry included in the 'catalogue of livestock and poultry genetic resources' is not prohibited.<sup>47</sup> The use of wildlife for scientific research, medicinal uses, or exhibition is also not prohibited, but

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42 Convention on International Trade in endangered species of Wild Flora and Fauna (1973).

43 Brian Barth, 'Can Asia's infectious disease-producing wildlife trade be stopped?', *Food and Environment Reporting Network* (23 March, 2020) available at <<https://thefern.org/2020/03/can-asias-infectious-disease-producing-wildlife-trade-be-stopped/>> (assessed 10 April 2020).

44 Laney Zhang, 'China: Legislative Decision Passed to Punish Trade and Consumption of Wild Animals amid COVID-19 Epidemic', *Global Legal Monitor* (19 March, 2020) available at <<http://www.loc.gov/law/foreign-news/article/china-legislative-decision-passed-to-punish-trade-and-consumption-of-wild-animals-amid-covid-19-epidemic/>> (assessed 15 April, 2020).

45 The 2020 Order, Art. 1.

46 The 2020 Order, Art. 2.

47 The 2020 Order, Art. 3.

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requires undergoing a strict approval process and quarantine inspections.<sup>48</sup> This directive of China was widely praised by global environmental organizations, some even went on to say that China is going to lead global campaign for wildlife trade ban but soon China reopened its wet markets and expectations of global community from China regarding wildlife consumption and trade prohibition remain short-lived.

On 28 March 2020, the Wildlife Conservation Society came up with its own policy<sup>49</sup> to prevent future COVID-19 like pandemics whereby it is recommending that all commercial wildlife trade for human consumption should be stopped and all such markets should be closed. The policy suggested robust enforcement mechanisms to deal with emerging and re-emerging pandemics in future. According to this policy, the governments should stop all commercial trade in wildlife, evaluate risks of commercial pet trade in terms of disease transmission and risks to public health. The policy recognized that wildlife habitat destruction is the prime cause for pathogen spill over from wild to humans. Endangered and other kind of status listing of animals, their legal/illegal trade, sustainability of removal of animal from wild have nothing to do with this fallout. Their common interface in markets, human's exposure to fresh blood/flesh, intermixing of one wild specie with another are the major reasons which humans might have to deal with in coming future.

To express solidarity with international environmental NGOs and activists on wildlife trade, nations are taking the lead at their own respective national levels. In Vietnam, steps are being taken to draft a wildlife trade and consumption prohibition law to be submitted by April 1, 2020.<sup>50</sup> Same measures are taken in other countries also like Laos,<sup>51</sup> Indonesia,<sup>52</sup> Cambodia,<sup>53</sup> etc.

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48 The 2020 Order, Art. 4.

49 Summary of WCS Policy and Messaging on COVID-19, available at <[https://c532f75abb9c1c021b8c-e46e473f8aadb72cf2a8ea564b4e6a76.ssl.cf5.rackcdn.com/2020/04/01/8294efiuzg\\_COVID\\_19\\_Summary\\_of\\_WCS\\_Policies\\_and\\_Messaging\\_March29.2.pdf](https://c532f75abb9c1c021b8c-e46e473f8aadb72cf2a8ea564b4e6a76.ssl.cf5.rackcdn.com/2020/04/01/8294efiuzg_COVID_19_Summary_of_WCS_Policies_and_Messaging_March29.2.pdf)> (assessed 13 April 2020).

50 'COVID-19 WCS News Statement: Viet Nam Prime Minister Proposes a Ban on Trade and Consumption of Wildlife', *WCS Newsroom* (11 March, 2020) available at <[https://newsroom.wcs.org/News-Releases/articleType/ArticleView/articleId/13919/COVID-19-WCS-News-Statement-Viet-Nam-Prime-Minister-Proposes-a-Ban-on-Trade-and-Consumption-of-Wildlife.aspx?\\_ga=2.159112506.1475426424.1585571819-475354784.1585571819](https://newsroom.wcs.org/News-Releases/articleType/ArticleView/articleId/13919/COVID-19-WCS-News-Statement-Viet-Nam-Prime-Minister-Proposes-a-Ban-on-Trade-and-Consumption-of-Wildlife.aspx?_ga=2.159112506.1475426424.1585571819-475354784.1585571819)> (assessed 10 April 2020).

51 'End the Wildlife Trade in Laos and Prevent Future Pandemics', *Laotian Times* (8 May, 2020) available at <<https://laotiantimes.com/2020/05/08/end-the-wildlife-trade-in-laos-and-prevent-future-pandemics/>> (assessed 11 April 2020).

52 Linda Yulisman, 'Calls grow to ban wildlife trade in Indonesia amid virus outbreak', *The Strait Times*, (1 February, 2020) available at <<https://www.straitstimes.com/asia/se-asia/calls-grow-to-ban-wildlife-trade-in-indonesia-amid-virus-outbreak>> (assessed 16 April 2020).

53 Kann Vicheika, 'WWF Calls for Stricter Implementation of Ban on Wildlife Trade-In Southeast Asia', (03 March 2020) available at <<https://www.voacambodia.com/a/wwf-calls-for-stricter-implementation-of>>

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**iv. Stochastic effects:**

The effects of the coronavirus pandemic which are not direct but consequential are called stochastic effects. There are numerous such effects of COVID-19 on environment related matters which despite not directly affecting the environment have the potential to severely halt or damage global efforts for protection and improvement of environment.

**i. Postponement of global environmental events and national decisions**

Various researches going on climate change, melting glaciers, studying deep sea bed etc are all halted in the wake of coronavirus.<sup>54</sup>The Super Year of 2020 would have been the milestone year from environmental perspective— the Kyoto second commitment period was ending, the Paris Agreement was to be implemented, post 2020 biodiversity framework was to be deliberated upon, the first Global Transport on Sustainable Transport was to be held in May 2020, Aichi short term targets 2011-2020 were to end, IUCN (The International Union for Conservation of Nature) was planning to hold the World Conservation Congress in Marseille, France, in June 2020, which is a once-in-four-years affair. The Second UN Ocean Conference dealing with ocean acidification was to be held this in 2020. Now all these events stand suspended or postponed thereby impeding the progress of international environmental law.

In 2018, USA deliberated upon the idea of Climate Action Framework to reduce its GHG emissions. The framework is not in force yet and it was to be released by US Congress in the month of March. But due to COVID-19, the release has been postponed indefinitely.<sup>55</sup> Similarly the efforts of developing countries for transition into renewable energy-based economies will also face serious setbacks.

**ii. Renewable energy**

Due to the COVID-19 pandemic, there is sharp decline in growth of renewable energy sectors like solar energy, wind energy, etc. The stock prices of solar companies (Jinko Solar Holding Co. and Canadian Solar Inc)

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ban-on-wildlife-trade-in-southeast-asia/5313081.html > (assessed 18 April 2020).

54 Kate Yoder, 'Empty labs, abandoned research: Coronavirus puts science on hold', *GRIST* (27 March, 2020) available at <<https://grist.org/climate/empty-labs-abandoned-research-coronavirus-puts-climate-science-on-hold/>> (assessed 19 April 2020).

55 Zoya Tierstein, 'Coronavirus postpones major climate plan in Congress', *GRIST* (16 March, 2020) available at <<https://grist.org/politics/coronavirus-postpones-major-climate-plan-in-congress/>> (assessed 19 April 2020).

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are plummeting. A research firm named Bloomberg New Energy Finance has changed its earlier prediction of growth rate of renewable energy from 121-152 gigawatts to 108-143 gigawatts.<sup>56</sup> In USA, the companies dealing in solar and wind energy-based projects are facing supply side problems where they are now served 'force majeure' notices from Asia based suppliers.<sup>57</sup>

Already the year began with Russia-Saudi Arabia crude oil war resulting in reduction of global crude oil prices. The current pandemic gave further jolt and the consumption of oil reduced drastically due to which the prices further dropped. The cheap oil has potential to severely undermine clean energy transitions globally and put a long-term halt on energy efficiency policies of nations. The governments across the world have been stocking excess crude oil which will be put to use once the lockdown is lifted. This means possible increase in GHG emissions disrupting global climate change efforts and further delaying the transition of developing countries to green-renewable energy-based economies.<sup>58</sup>

### iii. Waste management

Due to the COVID-19, the use of single-use products like masks, hand-gloves, sanitizers, testing kits, used or expired medicines, etc., has increased at the global level. The plastic industry wants to make the most of this opportunity by re-popularizing the use of single-use plastics/bags/containers and they are asking the governments to lift the ban on single use plastics.<sup>59</sup> Ironically, few places have temporarily banned the use of reusable plastics which is a complete reverse trend than what was expected.<sup>60</sup>

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56 Emily Pontecorvo, 'Solar power has been growing for decades. Then coronavirus rocked the market', *GRIST* (Mar 16, 2020) available at <<https://grist.org/energy/solar-power-has-been-growing-for-decades-then-coronavirus-rocked-the-market/>> (assessed 11 April 2020).

57 *Ibid.*

58 Fatih Birol, 'Put clean energy at the heart of stimulus plans to counter the coronavirus crisis', *IEA* (14 March, 2020) available at <<https://www.iea.org/commentaries/put-clean-energy-at-the-heart-of-stimulus-plans-to-counter-the-coronavirus-crisis>> (assessed 10 April 2020).

59 Katherine Martinko, 'Don't let this pandemic ruin the fight against single-use plastics', *Treehugger* (26 March, 2020) available at <<https://www.treehugger.com/plastic/dont-let-coronavirus-ruin-fight-against-single-use-plastics.html>> (assessed 17 April 2020).

60 L.V. Anderson, 'One state just banned reusable shopping bags to fight coronavirus', *GRIST* (24 March, 2020) available at <<https://grist.org/climate/one-state-just-banned-reusable-shopping-bags-due-to-covid-19/>>; L.V. Anderson, 'Can the zero-waste movement survive the coronavirus?' *GRIST* (11 March, 2020) available at <<https://grist.org/climate/can-the-zero-waste-movement-survive-the-coronavirus/>> (assessed 11 April 2020).

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While using single-use products is not a solution to COVID-19, once the pandemic is over, their treatment and disposal will be a grave problem especially disposal of medical waste. Lately, the environmental groups in Hong Kong were bringing up the issue of dumping of face-masks in waterbodies which will severely imperil already endangered marine life. Such sights will become common once the pandemic is over and it will further push back the efforts of certain people and organizations who are fighting the menace of litter in marine environment.

From time to time the World Health Organization has come up with various guidelines urging governments to undertake robust waste management activities in their own territories giving special importance to medical and hazardous waste because of the harmful chemicals they contain.<sup>61</sup> If left untreated, these wastes will endanger human, animal and plant health along with the overall environment. Thus, treatment and disposal of such wastes should begin at source, by properly segregating them and taking all measures to collect, contain and transport them.

#### iv. Diversion of Funds

Section 135 of the Indian Companies Act, 2013, governs Corporate Social Responsibility (CSR) in India. From 2014-2018, around 9% of CSR funds (which is equal to 4000 crore INR) in India have been spent on environment, animal welfare and conservation of resources (including the Clean Ganga Fund).<sup>62</sup> The latest notification has clarified that due to special situation like COVID-19, the contribution made to the 'PM CARES Fund' shall qualify as CSR expenditure under item no. (viii) of Schedule VII of the Companies Act, 2013.<sup>63</sup> The money from this fund will be spent on COVID-19 related activities like health, hygiene and disaster management. While the pandemic is really an emergency but we should not forget that the origin of this deadly virus is in the wild and so in order to find a long-term solution to this problem, governments should invest in biodiversity conservation. The Indian Environmental Secretary in his official letter the Ministry of Corporate Affairs asked them not to divert CSR funds and

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61 Safe management of wastes from health-care activities: a summary, World Health Organization (2017) available at <<https://apps.who.int/iris/handle/10665/259491>> (assessed 10 April 2020).

62 Ministry of Corporate Affairs, Government of India, *Report of The High-Level Committee on Corporate Social Responsibility 2018*, (2019) 39-41 available at <[https://www.mca.gov.in/Ministry/pdf/CSRHLC\\_13092019.pdf](https://www.mca.gov.in/Ministry/pdf/CSRHLC_13092019.pdf)> (assessed 10 April 2020).

63 Office memorandum F. No. CSR-05/1/2020-CSR-MCA dated March 28, 2020.

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increase investment in environment related activities.<sup>64</sup>

**v. Moulding of existing environment protection laws**

Due to the COVID-19 pandemic, the companies/factories all around the world are asking for various kinds of bailouts from their respective governments. These bailouts include economic stimulus packages and relaxations in procedural requirements like Environmental Impact Assessment, labour laws, etc. Some nations are also seen granting these relaxations for quick economic recovery. UN Special Rapporteur on human rights and the environment, David Boyd, has criticized such measures and warned countries that their actions will have adverse impact on biodiversity and indigenous local people.<sup>65</sup>

The table below lists various measures taken by selected countries across the world and discusses the positive/negative impact of these decisions.

**List of Legislations or Measures taken in various countries due to COVID-19 Pandemic having significant impact on Environment**

<b>S. No</b>	<b>Country</b>	<b>Legislation</b>	<b>Changes made or proposed</b>	<b>Impact on Environment</b>
1.	USA	US Environmental Protection Agency (EPA) directive	<ul style="list-style-type: none"> <li>• Suspended the monitoring and reporting requirement of environmental pollution laws</li> <li>• weakened the Toxic Substances Control Act</li> <li>• Lowered vehicular emission standards</li> </ul> South Dakota, Kentucky and West Virginia criminalized fossil fuel protests	Negative

<sup>64</sup> Antony PU, 'A mask won't hide the truth, nor save us from viruses', *Deccan Herald* (08 May, 2020) available at <<https://www.deccanherald.com/opinion/in-perspective/a-mask-won-t-hide-the-truth-nor-save-us-from-viruses-835081.html>> (assessed 18 April 2020).

<sup>65</sup> 'COVID-19 environmental roll back 'irrational and irresponsible': rights expert', *UN News* (15 April, 2020) available at <<https://news.un.org/en/story/2020/04/1061772>> (assessed 25 April 2020).

2.	India	Companies Act, 2013, Insolvency and Bankruptcy Code, SEBI regulations	<ul style="list-style-type: none"> <li>• CSR provisions as discussed above</li> <li>• Certain relaxation in compliance and reporting requirements have been given.</li> </ul>	Negative/still unsure
		Amendment of 2006 EIA Notification	Delisted drugs from Category A to B2 and exempted them from EIA study	Negative
		Draft EIA Notification, 2020	<u>Proposed:</u> relax requirement of public hearing in number of projects and also making it easier for companies to obtain environmental clearances in much lesser time	Negative
		CPCB Guidelines on medical waste management	Allowed construction of renewable projects during lockdown	Positive
		Ministry of Home Affairs revised guidelines		Positive
3.	China	China's National Health Commission's (CNHC) order of February 24, 2020	Banned wildlife consumption with certain exceptions like dairy, poultry	Positive
		CNHC's recommended list of treatment for COVID-19 include Bear bile juice	Allowing trade in wildlife specimens	Negative
			Suspension of environmental regulations indefinitely	Negative

4.	Indonesia	Introduction of 'Job Creation Bill' in Parliament  Regulation of 27 March 2020 abolished 'V legal requirement'	<ul style="list-style-type: none"> <li>• Companies not required to conduct environmental study</li> <li>• Norms relaxed for coal mining</li> <li>• AMDAL requirement (environmental study) is suspended for Plantation industries</li> </ul> <p>Weakened Timber Legality Assurance System (SVLK) which was backbone of Voluntary Partnership Agreement between EU and Indonesia. This will increase illegal timber supplies.</p>	Negative  Negative
5.	Brazil		Relaxation in environmental regulation processes inviting illegal logging and encroachments	Negative
6.	South Africa		Relaxed environmental regulations in mining sector	Negative
7.	Canada	Environment Quality Act (Quebec)  GHG Industrial Reporting and Control Act (British Columbia)  Water Act and other environmental regulations (Alberta)	<p>COVID-19 related activities/ businesses exempted from lengthy procedural requirements including environmental feasibility tests.</p> <p>Discretion to authorities to accept incomplete emission reports</p> <p>give more time for compliance with environmental regulations and relaxation in reporting requirements</p>	Negative  Negative  Negative

		Ontario's Environmental Bill of Rights (EBR).	<ul style="list-style-type: none"> <li>• Public consultation requirements suspended</li> <li>• Right to appeal against some projects and permits also removed</li> <li>• Ministers not required to refer "Statements of Environmental Values" for making decisions that have significant impact on environment.</li> </ul>	Negative
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### MISFORTUNE OR OPPORTUNITY

Although the COVID-19 pandemic is definitely the biggest catastrophe that modern human civilization has encountered, it would be imprudent to say that it will be the biggest havoc of the 21<sup>st</sup> century. Human aspirations and greed for greater economic wealth have exposed entire humanity to obscure risks. From human health to economy to job security, it has affected almost all areas humans were proud of, proving that our existence can't even outlive a tiny virus invisible to our naked eyes.

But it is just a way of looking at this problem and greater difficulties may be awaiting us. As John Adam puts it 'Every problem is an opportunity in disguise,' it's time for international bodies, sovereign nations and individuals to undergo self-introspection and find rather unique solutions to this problem. Following Strategies may be adopted to convert this misfortune into an opportunity.

**Green Recovery and Sustainable Development:** Just like post WWII scenario, economic reconstruction will be the prime agenda of all nations once the effect of pandemic is over. This recovery should be truly sustainable and not at the cost of environment. The governments should make plan for green recovery where climate change concerns are taken into consideration, massive investment in renewable energy should be made, reduce and gradually eliminate reliance on thermal power, afforestation, strict land use laws, research for introducing green jobs, strict sanitation and hygiene at work place and public places, etc., should be given due consideration.

**Re-globalization + Self Sufficiency:** Post WWII, there were two major blocks USA and USSR who were taking major geopolitical and economic decisions for the rest

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of the world. After the Soviet disintegration, the world for some time became unipolar but since 2000, China's rise has challenged USA's dominance. Post COVID-19, the nations – developed and developing alike should come together and try to re-globalize the world by reducing China's influence. This strategy should be coupled with each individual nation's efforts to reduce its dependency on other nations for basic-moderate necessities. Gandhian self-sufficiency model could be adhered to in this regard according to which the villages should be self-sufficient in all respects in order to promote social welfare and reduce income inequality. The economic revival should aim to reduce rising income inequality across nations.

**Political will and public support for climate action:** Talking pragmatically, the laws are made keeping in mind not human sentiments but political decisions. Hence mobilization of political will becomes extremely important to achieve significant changes at the ground level. Politicians have been ignoring pro-environment decisions in the name of economic development and uncertainty of environmental science. Now the situation created by COVID-19 could be used to marshal governments to take unprecedented decisions in the sphere of human health, environment and biodiversity conservation.

Undoubtedly, just like governments, certain factions of public like businesspersons and development enthusiasts were also not ready to compromise with economic development of a nation. The lockdown period served as an epiphany for them, making them experience cleaner air, water, previously unseen natural sights, etc. Change of behaviour was also noticed among people making them cooperate with governments by practicing quarantine and self-isolation. This behavioural change could be used for taking collective action and pressurizing government to make better investment decisions.

**Hard international law instruments:** As discussed above, principles, declarations, guidelines and even soft law instruments are there at the international level which take up environmental, conservation and health issues but not one single document is universal and completely binding in nature. In the era of global inter-dependency, health and environment can't be managed in isolation and hence sovereignty principle demands to be curtailed in this specific area for the greater benefit of humankind.

**Businesses in virtual mode:** The famous words of Robert Frost "In three words I can sum up everything about life: it goes on" became extremely relevant during the COVID-19 global lockdown. The schools, offices, etc., everything has remained shut but regular work has continued via the online mode. Never before has the internet put to such great use. It opened new dimensions of working for the entire humanity which

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should be continued even in the post-COVID-19 phase. International workshops, seminars, conferences, COPs of International Conventions are all organized with the purpose of sharing of opinions and knowledge with others. But in the due process, they are also responsible for carbon footprint on earth. Hence 'virtuality' should be the new norm and physical presence should be demanded only when it's extremely necessary.

## CONCLUSION

While it is true that pollution levels have reduced substantially due to COVID-19 lockdown, it is still difficult to estimate the long-term environmental impact of this pandemic once the normal human activities resume. We remain unsure as to whether states will shift to non-fossil fuel-based energy sources or will wildlife trade be totally banned across the globe or will personal hygiene and waste management become priority areas for government in the near future. In 2008, the whole world was affected by the then financial crisis, due to which there was some dip (1.3%) in global emissions, but it soon regained its previous levels in 2010.<sup>66</sup> This year, the estimated drop will be around 8% according to international energy agency.<sup>67</sup> Its recovery also should be definite as and when the economic activities resume.

Despite these reservations, we must not forget that COVID-19 has opened new roads for the entire humanity where we are given a chance to better analyse the existing situation and work for reforms from within. Today, the governments and people, who used to give this excuse that changes can't happen overnight, COVID-19 has opened their eyes and proved to the world what humans can do if the much required 'will' is there. If we can postpone all emergency works to deal with threat to human life posed by a virus, it's time that we change our mode of dealing with environmental problems because, may be then, we can convince all the significant groups in society that immediate environmental action is required otherwise human health and the very existence of humans on earth will be at risk.

The world needs to reconsider its globalization-capitalistic theories and we as humans have to develop the habit of collective action where we use natural resources less, travel by public transport more, reduce our carbon footprint by planting more and

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66 Martha Henriques, 'Will Covid-19 have a lasting impact on the environment?', *BBC* (27 March, 2020) available at <<https://www.bbc.com/future/article/20200326-covid-19-the-impact-of-coronavirus-on-the-environment>> (assessed 20 April 2020).

67 'IEA: Coronavirus impact on CO2 emissions six times larger than 2008 financial crisis', *Carbon Brief* (30 April, 2020) available at <<https://www.carbonbrief.org/iea-coronavirus-impact-on-co2-emissions-six-times-larger-than-financial-crisis>> (assessed 30 April, 2020).

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more trees, etc. By making these changes, humans can also fight grave threats like climate change. Today the hope lies in the behavioural change of individuals.