



Corona (COVID-19) period contemplation: Our Environment during SARS CoV-2

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ABSTRACT:

COVID-19 diseases started in a sea food market in Wuhan, China and it's spreading across the world. The new corona virus SARS-COV-2 is freaking out medical expert and governments. How dangerous is this virus, actually? How fatal is it for you? In order to know this; I'd like to show you some facts. According to the information of World Health Organization (WHO as of 3rd May 2020), total numbers of infected people until now 3318755, out of these, around 236431 people have died in more than 215 countries throughout the world. The incubation period of the COVID-19 is between 2-11 days that is, if you are infected, it might take 11 days for the symptoms to show up in your body. You've contracted the infection while you assume yourself to be healthy and fit and you have no disease but then too, you can spread infection to other people. This is what makes COVID-19 extremely dangerous. The symptoms are not visible in the people and they go out and interact with other people and they spread the disease. This paper describes the positive impact of lockdown on worldwide environment, and how are economy and environment always seen inversely proportion to one another. Recent data released by NASA (National Aeronautics and Space Administration) and ESA (European Space Agency) indicates that pollution in some of the epicenters of COVID-19 such as Wuhan, Italy, Spain and USA etc. has reduced up to 30%. In this paper we will also taking about the vaccine candidates being developed by the scientists at different Institute like the University of Oxford Jenner Institute, oxford vaccine group and also discuss in this paper to give you a complete knowledge that surrounding this vaccine.

INTRODUCTION

The first thing you need to understand is that corona virus is not the name of single virus. The name corona virus has been assigned to a family of viruses. I tell you an interesting fact the common cold like the cough and cold that you catch during winter that too is a type of corona virus. Another epidemiological study in adults estimates that corona virus causes about 15% of common colds [1]. In 2002-2003, a SARS virus had become widespread, if you remember that too was a type of corona virus [2]. What is affecting the people right now is a new type of corona virus. There's a place in China called Wuhan it was found there on 31st December, 2019. This new strain of corona virus has been named N-COV Novel corona virus. Novel means new this strain is so new that they could not even think of a name so they named it Novel corona virus. Now

the scientists have named it as SARS-COV-2 because this virus is very similar to the SARS virus that had spread in 2003 and hence it is being referred to as SARS-COV-2. The disease caused by this virus has been named as COVID-19. The original source of most of the corona viruses is mostly some animal which affect a human and then later through human to human contact or transmission these corona viruses spread amongst humans. For example, in the case of SARS, the original source was a bat [3]. Middle East Respiratory Syndrome (MERS) is another similar corona virus which spread in the Kingdom of Saudi Arabia (KSA) [4] and Jordan [5] during 2012-2013. The original sources of that was a camel [6]. The exact original source of the new corona virus which has not yet been discovered. Some scientists suspect that the original source might be snakes [7] but some scientists believe that they might be bats again [8]. Because there are 96%



similarities in the new corona virus as compared to the corona virus that come from bats [9]. The symptoms of all these corona viruses are very similar to each other [10]. For example cough, cold, headache, fever, chills, sore throat. All these happen to you even when you catch a cough a seasonal flu and these are the symptoms of new corona virus too.

According to the latest information corona virus has spread in more than 215 countries across the world. At the rate at which this virus is spreading, cities worldwide have been locked down to contain its spread all schools, restaurant, shops, cinemas, gyms, Air-travel all have been shut down. I am not criticizing the decision of lockdown, lockdown was necessary. But whenever such a drastic decision is taken, there are bound to be side effects. It is essential to discuss these side effects so that the negative side effects are minimized and people face as little difficulty as possible. I am not taking about India; I am taking about the entire world. What decision and action are the governments across the globe taking to minimize the negative side effect? A lot of treatment and cures have gone viral on a social media to treat the corona virus. For example, a Whatsapp forward reads good news! Wuhan's corona virus can be caused by one bowl of freshly boiled garlic water. Old Chinese doctor has been also proven its efficiency many patients have also proven this to be effective, its means consume garlic and treat your corona virus. Some say that consuming organic oil will cure it our own government says that the corona virus can get cured by homeopathy and ayurveda. A Hindu Mahasabha president says that consumption of Gaumutra and cowdung can cure the corona virus. The truth remains that all of these people are talking rubbish. Nobody has any cure available with them. As of now Vaccine exists against the corona virus, neither does any treatments exist. Only if your immune system is strong then it can fight it and you can recover from it. The Vaccine is currently under development. It has been estimated that it might take around a year to introduce its vaccine. When SARS broken out in 2002-03, then it took 20 months to introduce its vaccine [11].

Due to this virus, talks of social distancing are being done today that is, avoid getting out of your homes and when you do get out of your houses and then maintain

distance of approximately 6-7 feet from the other people. So that you do not come into close contact with them and the infection does not spread a lot. Right in the beginning when the lockdown was announced, a critical communication failure on the part of the government was visible when the Indian PM delivered his speech; they did not specify which establishment would remain open and which ones would be shutdown. This caused the people to panic and this was the scene outside the grocery stores and some other shops at that night when lockdown was announced. Although later the government did clarify that essential services would remain open for example like food stores, groceries, ration shops, dairy, fruits, vegetables, meat, fish, bank, ATMs, insurance offices. Now, here the people should also have understood that when the lockdown is being announced so it wouldn't be that the government would not even let you buy food if you go out. Similar incidents were witnessed in the other countries as well that when the lockdowns were announced. Due to the virus and due to lockdown of the cities, as well as shut down of public places the people have been unable to work. This will have such an economic impact on the world economy which has not been seen in centuries. A separate paper can be made on the entire situation as to how the COVID-19 virus is impacting the economy. In this paper we discuss regarding the impact of corona virus and lockdown on the environment and how economy and environment always seen inversely proportional to each other. When the economy crashes, then it is good news for the environment and when economy booms, it is bad news for the environment and also International Monetary Fund (IMF) has said that due to the lockdowns because of corona virus the economy worldwide has already been hit by recession. Infact according to them not only will this recession be worse than the 2008 Global Financial crisis but it will be the worst economic recession in the past 100 years after the great depression of 1930s. In this paper I'd like to explain its economy impact upon the world economy. What is the current status? What is expected to be the condition of the world economy in the coming future? What impact will it have on your jobs and studies? We will get to know all of this in today's discussion.



1. ENVIRONMENTAL IMPACT

We discuss about something that you must've been witnessing around you during this lockdown, also the impact of corona virus and lockdown on the environment. What can we learn from this? Why are economy and environment always seen inversely proportion to one another? When the economy stumbles, environment beings to become better. Why does this? We discuss all the points one by one.

a. NITROGEN DIOXIDE (NO₂)

Nitrogen dioxide is a toxic gas that is emitted from the engines of cars, buses, trucks and from factories. The WHO states that if this gas is more in concentration than 200 micrograms per cubic metre [12] then it can cause an enormous inflammation in your breathing pipe which can lead to problems like asthma. Now due to this lockdown, the number of cars plying on the roads have becomes less, factories have shut down and hence in the cities all over the world the concentration of nitrogen dioxide in the air has fallen drastically have a look at the first example in china.

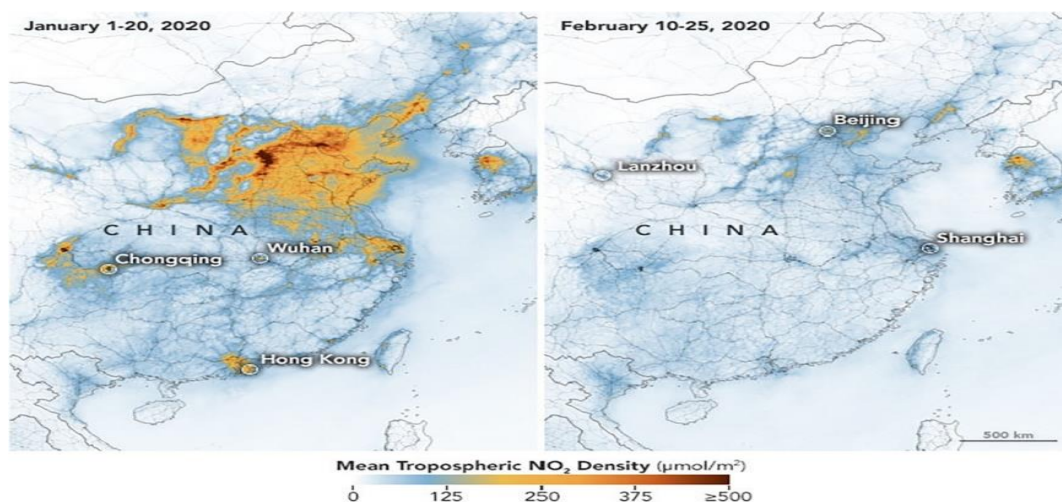


Fig. 1: NO₂ emission in China before and after lockdown [11].

The levels in the month of January and then look at how much it has fallen in February. Exactly the same things were witnessed in the cities of Europe like in Spain, UK, and Italy.

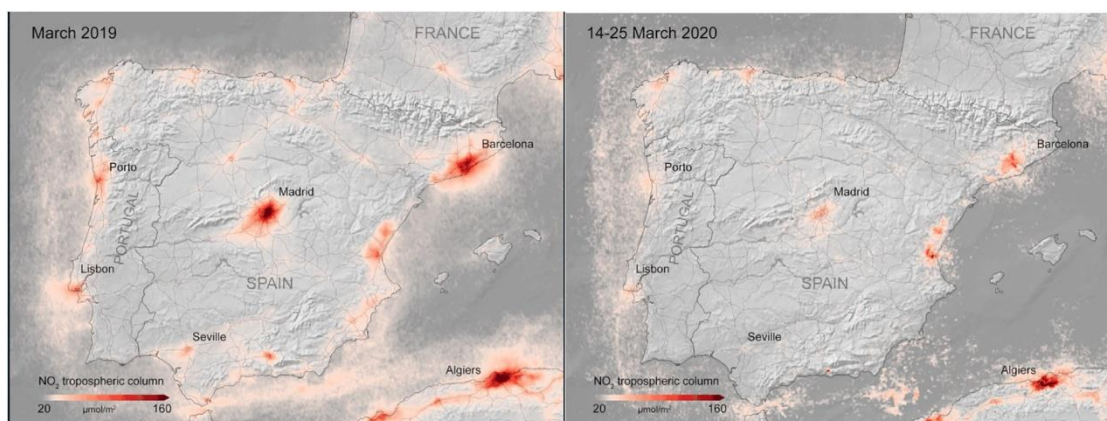


Fig. 2: NO₂ emission in Spain before and after lockdown [11].

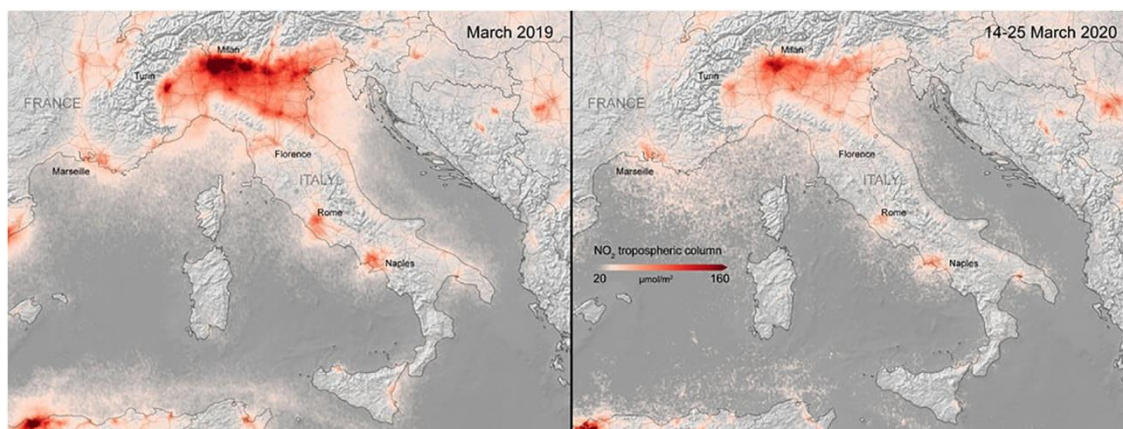


Fig. 3: NO₂ emission in Italy before and after lockdown [11].

Take the example of Italy notice how much of NO₂ was present in March, 2019 and how much it got reduced in March, 2020. Exactly the same this was witnessed in India city look at Mumbai, Delhi,

Chennai, Kolkata, and Bangalore. You can observe now the NO₂ concentration have fallen in comparison to 2019 in these cities.

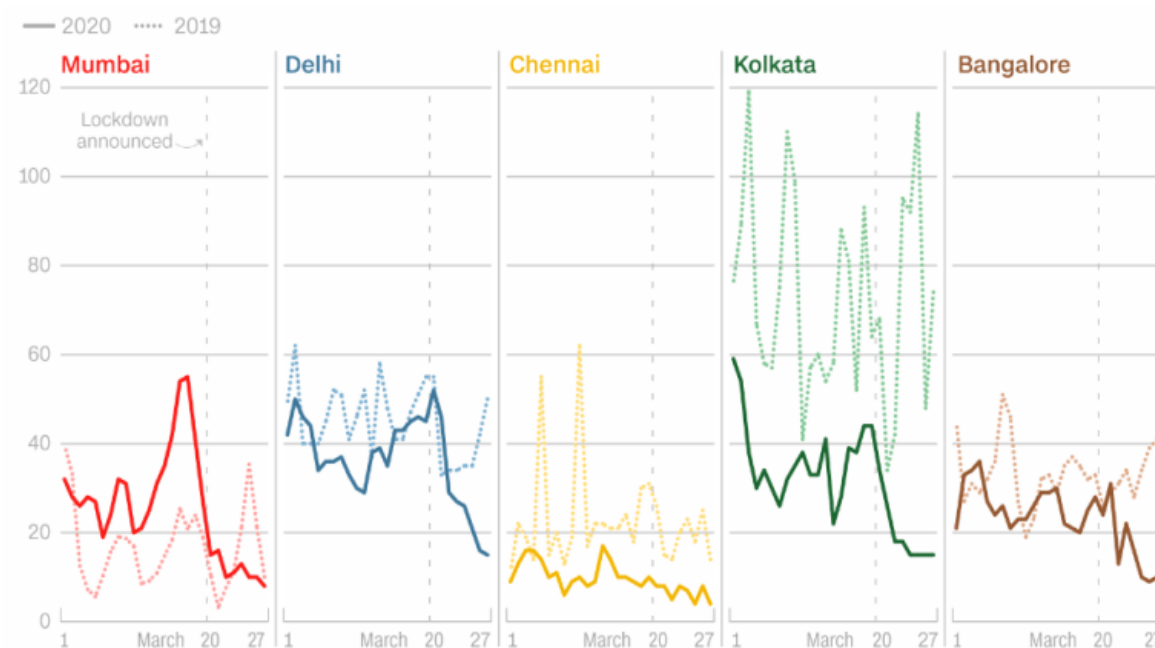


Fig. 4: NO₂ emission levels fell dramatically after India’s lockdown [11].

If you want to look at the comparison of the past one month then observe these charts. You can notice how gradually from duration (11th -24th) March to (25th – 7th) April concentration began to decline.

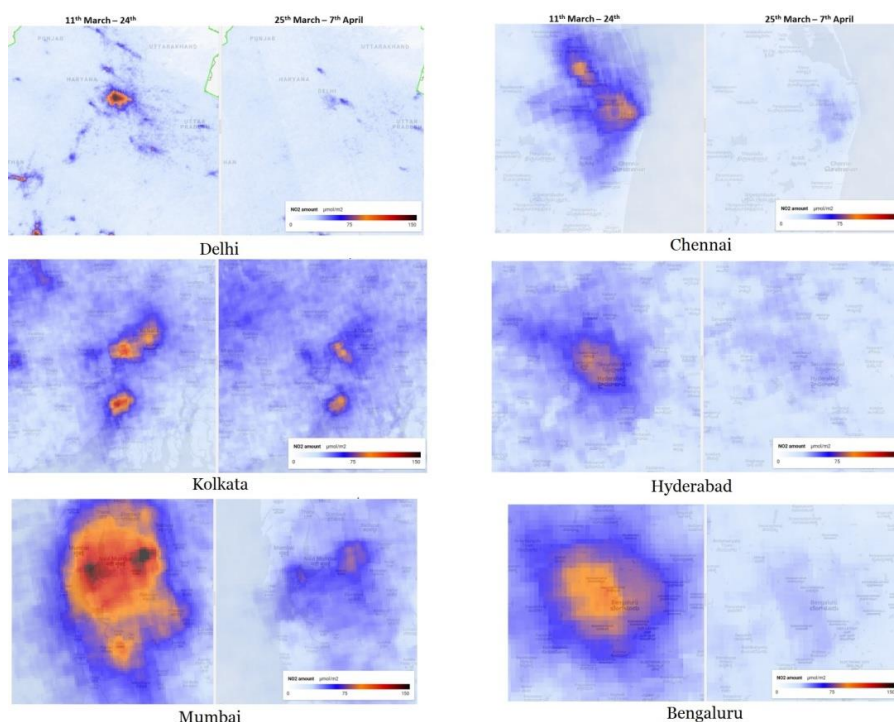


Fig. 5: NO₂ emission comparison of past one month [11].

b. PARTICULATE MATTER (PM 2.5)

The particulate matter 2.5 or PM 2.5 is one of the most harmful forms of air pollution which is included in the category of group-1 carcinogen and it is so small that it

can travel from your lungs into your blood stream which will not only cause respiratory problems but also heart attack and can also cause premature death [13, 14, 15, 16].

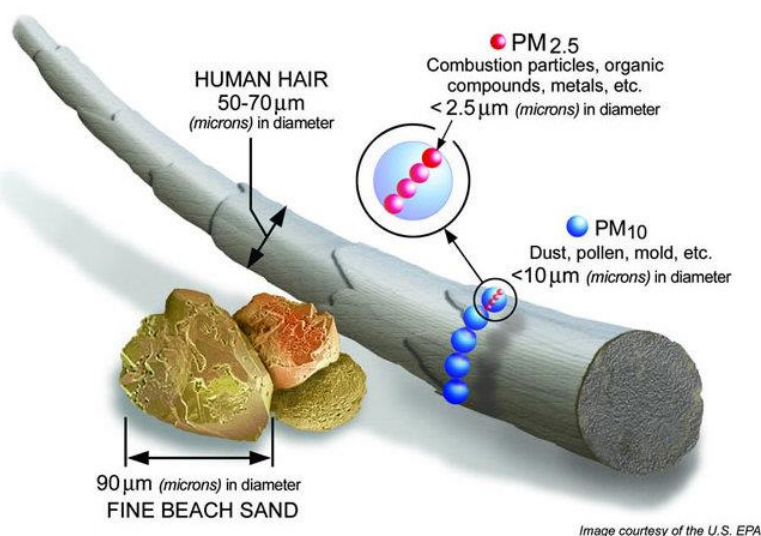


Fig. 6: Size comparisons for PM particles [32]



It is so deadly that WHO has estimated that every year worldwide more than 5 million people are killed due to PM 2.5 caused like heart diseases, stroke, Lung cancer, chronic lung diseases and respiratory infections [17]. Now due to the lockdown, even the PM 2.5 level have

reduced worldwide. If you look at India's map then it is very easy to distinguish that what was the concentration of the PM 2.5 levels in the entire country on 2nd May, 2019 and what was the concentration on 2nd May, 2020.

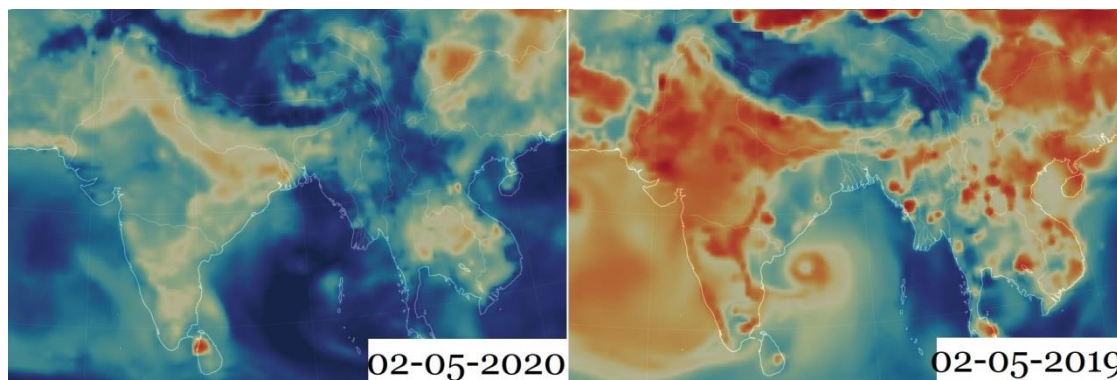


Fig. 7: Instantaneous PM 2.5 levels over India on 2nd May 2019 and 2020 [18]

It has depleted by a significant amount. This is the reason why, these days you are able to view the clear blue sky in different cities across the country.

Take a look at some picture you would even be able to recognize that how much difference air pollution makes in the beauty of a city or country.



Fig. 8: Picture shown unprecedented reduction of air pollution in Mumbai before and after lockdown [19].

A question might arise in your minds here that if PM 2.5 levels have reduced so drastically under lockdown, then the number of people dying of air pollution would also have become less. The lives of people must be getting saved due to the fall in air pollution. A scientist from Stanford university has done a research regarding this, he collected the data of the PM 2.5

levels in the Chinese cities and compared it to the mortality rate and observed what impacts would falling PM 2.5 levels would have on the mortality rates [20, 21, 22]. This research concluded that the falling levels of pollution in China in just this one month more than 70,000 lives have been saved due to the decrease in air pollution [23]. The total number of



deaths due to the corona virus worldwide is around 75,000 at the end of the month April. When you compare these two data you conclude that number of lives have been saved just within china due to the decrease in air pollution.

c. WATER POLLUTION

Not only the air but the water of our rivers is also becoming clearer. The Delhi Jal Board vice chairman Raghav Chadda says that due to the stoppage of the industrial waste has definitely caused a positive impact on the water quality of the Yamuna river [24]. The best example of this can see in photos. These photos have been captured from Delhi and Noida [25, 26].



Fig. 9: Water quality of the Yamuna River has improved as industries have been shut during the nationwide lockdown in New Delhi and Noida [25, 26].

It is quite unbelievable to see because compare it to how the Yamuna river appears normally. These photos show nothing but the future potential. If the government constructs sewage treatment plants in the right manner and makes strong regulations for the companies and industries to treat their waste

themselves, then this can happen and our rivers can appear this way. This is the condition of not only the Yamuna but also of the Ganga river Dr. P.K. Mishra, an IIT Professor in BHU states that a 40-50% improvement has been seen in the water quality of the Ganga river [27].



Fig. 10: Water quality of the Ganga river has improved during lockdown in UP [27]

We should ensure such lockdown every year for a week so that the entire population of the country



realizes and sees how clear the air and water can become. They can catch a glimpse of the potential of where our country can reach.

d. WILD LIFE

This lockdown has probably also caused some effect upon the wildlife and animal life because a lot of news is coming in which rarely seen animals has come out on the street and rivers.



Fig. 11: A herd of spotted deer on the road to Tirupati and dolphins spotted at Kolkata ghats in India [28, 29]

I think according to the above discussion you understand that why animals have come out on the street and rivers because the streets are so deserted as well as rivers become clean. So it is a good thing that the people are observing the biodiversity in and around them. Despite the difficult situation that citizens around the world are experiencing in the face of the COVID-19 pandemic, today nature is reflecting a (temporary) environmental change that makes many animal species able to return into their original habitats. Various experts consider

that the present world situation is having a positive effect on fauna.

e. CLIMATE IMPACT

All of us are aware that carbon dioxide emissions are responsible for climate change. If you look at data of where the worldwide carbon dioxide emissions are emitted from, then you will notice that the transportation sector has a huge contribution in it

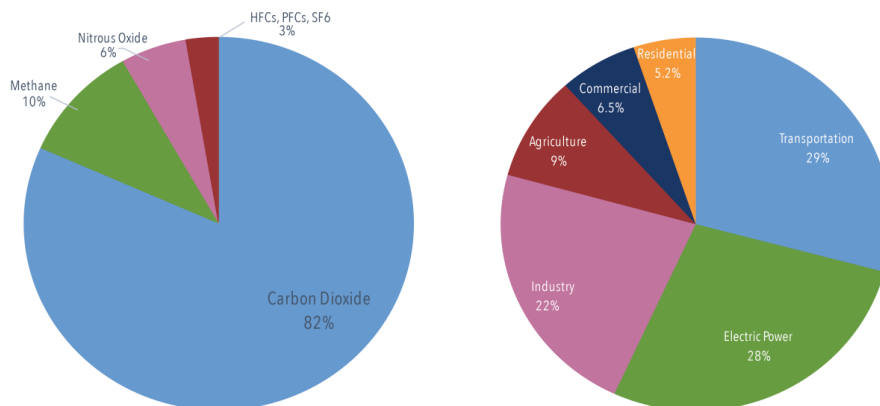


Fig. 12: U.S. Greenhouse Gas Emissions by Gas and Sector, 2017 [30]



and obviously during the lockdown. There has been a decline in all of it like lesser number of cars are plying less number of planes are flying and so, obviously there is massive decline in CO₂ emission but how massive? Experts are predicting that this is the biggest decline in CO₂ emission after world war-2 approximately a decline of 5%. But let us now move to the unpleasant information observe this chart which is related to the worldwide carbon emission over the past 60 years. You can see that the worldwide carbon emission have been steadily rising every year which has made the climate change from bad to worse. If you notice the places where there are drops in carbon emission you will see there has been a drop in 2008 financial crisis, carbon emission had declined then another drop was noticed in the Asian financial crisis, another drop was noticed when the USSR broke up and carbon emission had reduced.



Fig. 13: The chart of the worldwide carbon emission over the past 60 years [31]

There was a second oil crisis and first oil crisis then the carbon emission has declined. One thing is you observing a pattern here? The pattern is that whenever the economy crashes, the carbon emission go down and then it is good news for the environment. Why is this happening? This is happening because our economy is extremely inter linked with fossil fuels like coal, oil, petroleum and all the other non-renewable forms of energy. They are the primary source of energy today, which run the transportation sector, manufacturing Industry and which are responsible for generation of electricity generation

worldwide. This is the reason why, when the transport industry screech to a halt, then the carbon emission go down and this is the reason that when the lockdown are retracted the world become ‘‘NORMAL’’ again, then the carbon emission and pollution are going to go back up again. This is what happened in china as well their carbon emission fall by approximately 25% in the months of February and March when they had enforced a lockdown. Now as soon as they withdrew the lockdown by the end of March, their pollution and nitrogen dioxide levels have reached where they were prior to lockdown. But there is an opportunity amongst this unpleasant news a lot of Industries have already shut down and a lot of people have already faced job losses in this economic crisis. The government can use this opportunity to push the renewable energy industry when the government transfer money to the industries to revive themselves again and to revive the economy again then the government should focus more on the renewable energy. The coal, oil and petroleum industries should not be given a lot of support so that the shut industries remain shut and renewable energy gets a new lease of opportunity. It remains to be seen how many actions do the government takes on this and how much pressure does the public maintains upon the governments.

CONCLUSION

The present SARS-COV-2 pandemic is obviously a worldwide health problem. COVID-19 disease is an international pandemic and serious scourge to human health and wealth which chock the economical activity of the entire world, however it is also well thought-out as a ‘‘Blessing in Disguise’’, where pollution rate is decreases and nature is reclaiming it. Environment alteration is one of the major and very important challenges of the 21st century. In despite of their entire attempt to re-establish the nature during the last few decades, humans being could only cover a small number of steps forward. But in last 4-5 months, consequences of the deadly disease have successfully improved the climate to a great amount that should absolutely set positive impact on worldwide environment change. As of now, it remains so that all the positive effects that I told you in this paper all are temporary effects for a short term. The entire situation



is going to revert to the same as soon as the lockdowns are withdrawn. The clear air and the clear waters that you witness is only for a short while enjoy it because as soon as the lockdowns are withdrawn, the pollution and squalid conditions are going to increase again except unless you maintain the pressure on the government and give priority to such issues. From this paper we conclude that why and how economy and environment are always seen inversely proportional to one another. We also give idea about pre-clinical development of COVID-19 vaccine which is being carried out by the University of Oxford's Jenner Institute. Some important information regarding current status of clinical development of COVID-19 vaccine, also timeline for completion of this trial and when it's going to start the production.

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