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Press Release

**Article by JMI faculty published as Cover Story of Terra Green**

A research article authored by JMI faculty titled "The Impact of COVID-19 Pandemic on Environment and Socio-Economic Dynamics" has appeared as Cover Story in August 2020 issue of the TerraGreen, a Magazine of TERI Press having a global outreach and huge social impact.

The magazine provides in-depth analysis, reportage, glimpses of ground realities from around the world to its readers about the developmental and environmental issues for the last 14 years.

The authors of the article are Dr. Saba Noor, Dr. Shama Parveen and Professor Sher Ali who are associated with Centre for Interdisciplinary Research in Basic Sciences (CIRBSc), JMI.

Dr. Noor is a Research Associate, Dr. Parveen is an Associate Professor, working on molecular biology of human viruses like Coronavirus, Dengue, Chikungunya, Zika and respiratory syncytial virus while Professor Sher Ali has deep interest in comparative genomics and work that relates to human health care systems.

The COVID-19 pandemic has resulted in global lockdowns affecting almost every sector of the society. The pandemic affected the socio-economic dynamics in a big way.

This publication has highlighted the grim facts that humans have committed unprecedented atrocities on nature and are responsible for large scale deforestation, contamination of water bodies, habitat destruction, and overexploitation of the earth's resources. However, it is not too late to mend our ways and protect the overall environment as mentioned above.

It is envisaged that this publication would sensitize people and fine-tune our civility such that we act as responsible global citizens avoiding superstitions and complacency and refrain from unsustainable practices that enhance the vulnerability of the environment.

The article highlights that there should be concerted efforts from our side to extend helping hand to others without any reservation. We must also prepare to face the aftermath of this COVID-19 pandemic to rebuild the society, our nation, and the world.

**Ahmad Azeem**  
PRO-Media Coordinator

# Impact of COVID-19 Pandemic

on Environment and Socio-economic Dynamics

The coronavirus pandemic has resulted in global lockdowns, sharply restraining economic activity. The pandemic also had significant impact on socio-economic dynamics. Through this article, **Dr Saba Noor, Dr Shama Parveen and Prof. Sher Ali** wish to sensitize us to fine-tune our civility and act as responsible global citizens avoiding superstition and complacency. We must refrain from unsustainable practices that could harm the environment further. There should be efforts from our side to extend helping hand to others as much as possible in such pressing times. We must also prepare to face the aftermath of this pandemic to rebuild the society, our nation, and the world.





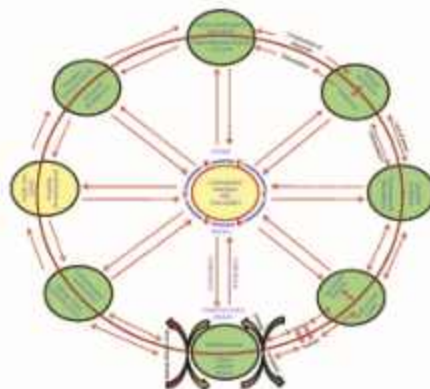
Currently, the coronavirus pandemic has caused global upheaval, impacting everyone on the earth. Humans have committed unprecedented atrocities on nature and are responsible for large-scale deforestation, contamination of water bodies, habitat destruction, and overexploitation of the earth's resources. It is still not too late for us to mend our ways and protect our environment, arrest its rampant contamination, recycle domestic and industrial waste, and undertake large-scale plantation to restore the forests and green belts.

Environment for us is like the soul in our body because it supports, nourishes, and sustains us. However, humans have been highly irresponsible and have destroyed all the bounties of nature in the name of progress. The industrial revolution has propelled the rate of consumption and we have started collecting things that we do not need or need in only small quantities. All such activities directly or indirectly put pressure on the environment. Despite much debate on the origin of the coronavirus, it is largely agreed that it is a zoonotic disease and has originated from animal(s). Some pathogens share symbiotic relationship with their animal hosts and survive without encroaching upon other living systems. When the survival of

these pathogens is at stake, they look for another host. Darwin's theory of 'survival of the fittest' remains operative all the time. If the newly found host happens to be human, that pathogen invariably proves to be virulent. Alternatively, it becomes an integral part of the human genome. If this relationship is favoured evolutionarily, the virus becomes a permanent guest. The coronavirus pandemic has raised several environmental, social, emotional, educational, economic, and health care-related questions. In addition, it has also posed a challenge to law enforcement agencies and



care givers. Despite many departments that are affected, the health care system is able to provide some respite from this dreaded disease (Figure 1).



**Figure 1:** The illustration shows that coronavirus contagion has affected almost every department/vector in the country. The only department that has a big role to play is human health care systems (two solid arrows). This includes hospitals and pharmaceutical industries. The discontinuous arrow means that such departments have negligible effect to contain the coronavirus pandemic though they are equally affected. The coronavirus pandemic in the middle circle (which signifies the globe) shows its prowess as it has access to every corner of the world clearly signalling that we must mend our ways if we want to live peacefully on the planet earth.

## Coronavirus and Human Infection

Coronavirus Disease 2019 known as COVID-19 is caused by severe acute respiratory syndrome Coronavirus-2 (SARS-CoV-2). The fact that it is highly contagious makes the war against this virus even more challenging. In the present scenario, humans can be divided into susceptible and resistant groups. This is because not every individual is affected with similar severity. Similarly, not every individual dies due to this infection. More than 80 per cent recover and of the remaining 20 per cent, 5 per cent die but rest also recover slowly. The infection and recovery are not only related to epidemiology but also associated with our immune system. However, the immune system fluctuates rapidly

and may be augmented by medicaments, food, clean environment, and a healthy lifestyle.

The human genome has close to about 3.5 billion haploid sequences and 20,000 genes. If a person is already suffering from diseases and he is also infected with coronavirus, such person would prove to be a sitting duck for this contagion. However, this may not be true for everyone because a strong immune system may protect a person from the perils of coronavirus infection. Thus, protecting an individual from the onslaught of the viral load may be the smart way to protect him/her from the infection. In this context, physical distancing makes more sense than relying on herd immunity. This is because herd immunity will first kill many and then protect some later whereas physical distancing will protect many and kill some later, largely those who violate rules of the game. The immune system is affected by the environment the person lives in. Thus, a polluted environment and unhealthy lifestyle will cause many avoidable diseases. A happy and contented person has a more robust immune system than that of an unhappy one.

In the Indian AYUSH (Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy) system and traditional Chinese medicinal (TCM) systems, several herbs are known to be strong immunomodulators. A popular herb tulsi (*Ocimum sanctum*) is known to help during respiratory stress. It has anti-microbial, anti-inflammatory, and expectorant properties, providing much-desired optimum respiratory support during cough and cold. Ashwagandha, Meshashringi, and Chandraprabha are safe and known immunomodulators but unfortunately not many people seem to be aware about these herbs. These medicaments available







commercially are not the cure for coronavirus but would surely augment the sagging immune system of a person providing resistance to the infection. Traditional knowledge and ancient wisdom may also be useful to establish a scientific correlation between an ailing and failing body. A healthy body maintains the optimal functioning condition 'homeostasis', which is the key to good health and resultant happiness. These alternative medicines largely originating from the plants affect human physiology, reproductive biology, metabolism, endocrinology, genetics, neurology, and immunology.

## Plants and Environment

Plants on the earth are 400 million years old, and humans, only 100 million but the significance of plants is all too well known to us. Humans have played havoc with the ecology disregarding the fact that nature maintains a very delicate balance to support and sustain the life processes. If this natural balance is disturbed, life on earth would become torturous. Like humans, other species also depend on one another for their survival and remain part of the ecological chain. The sordid saga is that during 1990–2016, humans have cut down 46 per cent of the trees on earth clearing 1.3 million square kilometres of the forest depriving the environment from the natural source of oxygen.<sup>1</sup> Trees can reduce

<sup>1</sup> Song XP, Hansen MC, Stehman SV, Potapov PV, Tyukavina A, Vermote EF, Townshend JR. August 2018. Global land change from 1982 to 2016. *Nature* 560 (7720): 639–643. doi: 10.1038/s41586-018-0411-9. Epub 2018 Aug 8; and <https://www.nationalgeographic.com/environment/global-warming/deforestation/>

particulate matter (PM) from 7–24 per cent and a single tree can produce 250 pounds of pure oxygen per year.<sup>2</sup> Trees are wonderful filters for dust, smoke, and harmful gases. Tree leaves cool the atmosphere through evapotranspiration providing moisture which in turn protects the forests from fire. A single tree can provide shelter to about 80 different species of birds and store up to 800 pounds of carbon dioxide (CO<sub>2</sub>) per year through carbon sequestration. A single oak tree can transpire up to 40,000 gallons of water into

<sup>2</sup> <https://www.bbc.com/news/science-environment-37813709>; and <https://www.thoughtco.com/how-much-oxygen-does-one-tree-produce-606785#:~:text=%22On%20average%2C%20one%20tree%20produces,for%20a%20family%20of%20four.%22>



the atmosphere in one year. These are few examples signifying the relevance of the trees in our lives. Trees offer medicine, rubber, food, flowers, wood and shelter to a large number of species which includes microbes, algae, fungi, insects, reptiles, amphibians and many small and large mammals.

The four Vedas—Rig Veda, Sama Veda, Yajur Veda, and Atharva Veda teach us a natural and simple lifestyle for our sustenance. Air, water and plants permeate the universe and are essential for the existence of life on earth, says the Atharva Veda. Yajur Veda says none should kill the animals useful for humans and one should protect the oceans as they are treasure troves. The tradition of harmony has been maintained since the time of Puranas. In essence, Vedic civilization was rooted in the judicious use of natural resources. Despite the availability of this valuable information, we remain largely ignorant or knowingly arrogant.

## Atrocities on Nature

No species has caused environmental damages as much as humans. Massive environmental degradation and large-scale atrocities on nature committed by humans have resulted in serious consequences. Global warming, food shortage, depletion of local germplasm, extinction of species, an outbreak of newer unknown diseases, and loss of forests are a few examples. Similarly, rampant use of polythene and plastics and their unscientific disposal allowing them to reach the water bodies have choked the entire system affecting the marine and aquatic species in a major way.

Nature has remained a silent spectator, tolerating the arrogant and defying attitude of the humans for much too long. But when this hegemony and high handedness reached the brim, nature could not take it anymore and now has started paying in the same coin. Some animals are used as food in a civilized manner. However, humans have also started consuming those animals that harbor different types of pathogens. Bushmeat is meat from wildlife species that are hunted for human consumption. The practice of bushmeat consumption has started showing the negative consequences. The current coronavirus infection that has gained gigantic proportions, is one such example caused due to our own follies. This pandemic must be seen as a wake-up call in a larger perspective. We had contagions earlier also but not to this unprecedented scale and not with such severity. In Western countries, the apparent environmental filth may be a lot less but the rampant use of plastic and packing materials have choked the water bodies affecting marine lives



in a big way. Because of our arrogance, we have not only committed the atrocities on nature but have also depleted the earth's resources by mining lands for minerals, coal, metals, and heavy earth materials. Thus, we brought many perils to the environment little realizing that we cannot ever defeat nature. This fact is now and warrants us to protect nature for the sake of humanity and future generations.

## Nature and Civility

Respecting nature and protecting environment does not require rocket technology. It only needs honesty, planning, will power, and a sense of responsibility and civility. A country should not be evaluated just by its technologies but by the character of its people. In the end, our worth depends upon our values and our greatness depends upon our goodness. We need to augment our sense of civility which comes handy in crisis. During the complete lockdown in the country, large number of daily wagers and labourers tried to walk back home but faced enormous difficulties and many died in the process. Many people came forward to help them while some others also tried to exploit their deplorable situation.





## Management of Coronavirus Pandemic and Aftermath

The management of coronavirus pandemic has put enormous strain both on the civilians and government machinery the world over. It calls for large-scale testing of the infected people, providing them medical and moral support and ensuring that they are able to adjust with the society after their recovery. However, in the absence of sufficient infrastructure and hospitals set up, many affected ones are unable to get the care they need. Further, the sagging economy has added additional woe to this scenario.

There are several countries in Africa where no protective gear and mask is available. Social distancing is almost impossible because poor people have to fend for themselves for basic things such as clean water, food, and shelter. Since governments in those countries have been running on ad hoc basis, they could never ever develop roads, hospitals, schools, colleges, universities, and trained manpower. Logically, affluent countries should have been better off to deal with this pandemic. However, the overall death rate belies this fact and shows that they are no better. The way to go is to ensure large-scale testing, providing health care to the affected individuals, and support poor citizens so that the wheel of the economy keeps moving. In the present situation, the governments all over the world need to be innovative, sensitive, and generous.

## The Burden on Corona Warriors

World over, caregivers, ambulance drivers, and police forces have received limited support. Many caregivers lack basic protective gear, gloves, masks, sanitized transportation, and mandated hassle-free access to food in a safe and secure environment. It is clear that coronavirus is not going to go away until we are



mentally, emotionally, and behaviourally sanitized. We must live with it and be prepared to face the forthcoming unexpected challenges. Governments world over must take stock of the situation and in retrospect assess both its achievements and failures. They should strive to fix the judiciaries, reform police system and criminal justice system, upgrade medical facilities, spend money on masses, particularly focusing on poor and elderly people, allow only those industries which show respect for the environment, and make tough laws against environmental pollution. It must be made mandatory to reuse, recycle, replace and arrest environmental degradation and get connected with nature. Needless to mention, nature includes plants, animals, mountains, oceans, rivers, ponds, lakes, deserts, insects, birds, and marine organisms. Therefore, the conservation of biodiversity is more important now than ever before. This would arrest the spread of future zoonotic diseases.

## Laws, Policies, Social Justice, Implementation, and Enforcement

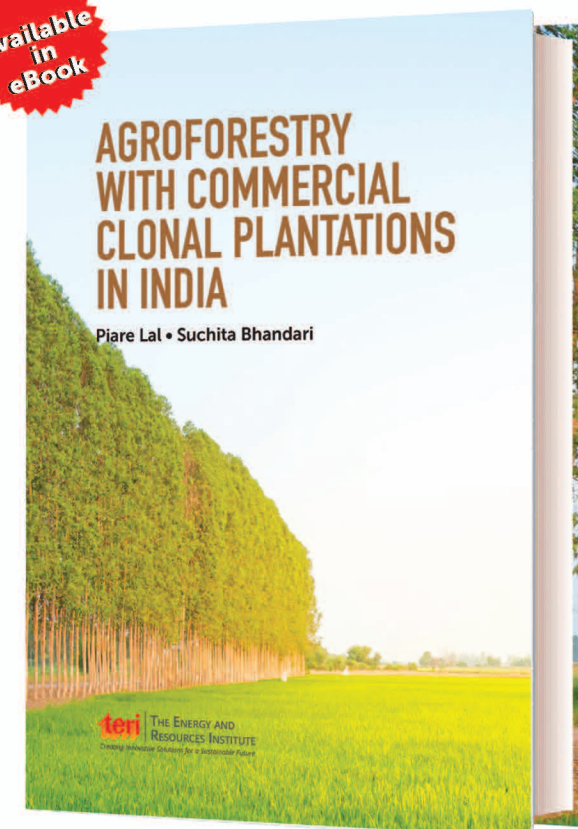
A communication gap amongst different agencies is a recipe for disaster that became clear during the migration of labourers and daily wagers from Delhi to UP, Bihar, West Bengal, and other parts of the country. The lack of coordination culminated in the colossal loss of lives and many died in road accidents. In addition, unexpected rude behaviour was shown by the police on daily wagers and labourers. On many occasions, police personnel played highly positive roles by looking after the distressed, old, and helpless people providing them food, medicine, and moral support, all free of cost. The current overall infrastructure in every sector must also be augmented only to ensure that we remain fighting fit on all fronts all the time. Similarly, citizens too have to act in a more responsible manner, sacrificing their own comforts and maintain harmony in the society, use earth's resources only as much as needed for survival. We need large-scale reform in the society including judicial, medical, industrial, educational, environmental, and banking systems. The ultimate aim and duty of the government must be to provide sense of security and overall happiness even to a common man in the society. If this is achieved, sustainable development of the society will automatically take place. ■

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