The mystery of COVID-19 and the question of environmental sustainability

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Abstract

The coronavirus disease 19 (COVID-19) is a highly transmittable and pathogenic viral infection. The disease is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which emerged in Wuhan, China in December 2019 and later spread quickly to other countries around the world. There is no vaccination or treatment for COVID 19, making it the most dreaded disease. The spread of the disease can be reduced by keeping social distancing and observing proper hygiene of hand washing using soap or rubbing 70% ethanol hand sanitizer. Since its emergence, scientists have been trying to understand the origin of COVID-19 and the virus that causes it: SARS-CoV-2. The origin of SARS-CoV-2 has been increasingly contentious. Several schools of thought on the origin of SARS-CoV-2 have come up. One school of thought believes that the virus was intentionally genetically engineered in a laboratory while another believes that the virus, highly similar to the bat-associated coronavirus, originated from nature. There has also been suspicion of accidental escape of a wild sample from laboratories due to poor laboratory safety practices. This article analyses the possible origin and spread of COVID 19 and lessons for science, as well as environmental balance and sustainability in the light of Christian ethics and inclusive development.

Keywords: environmental sustainability, genetic engineering, development and ethics

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1.1 Origin of COVID-19

Although Covid-19 has affected the entire world in a relatively short period of time, its genesis and treatment have remained a paradox with a number of literature grappling with its impact on the economy and the environment (United Nations, 2020, Francis, 2020 and 2015). This article seeks to contribute to extant debate on the origin of COVID-19 as well as its effects on environmental sustainability from both natural and social science perspectives. The Coronavirus disease 2019 (COVID-19) is an infectious disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). SARS-CoV-2 was reported on 31 December 2019 by Wuhan Health Commission (WHC) in the Hubei province of the Republic of China (Lu, Stratton & Tang, 2020). All the 27 cases reported in China were from Huanan Seafood Wholesale Market that trades live species of bats, snakes, pangolins, and badgers making scientist speculate the market as source of the virus. The SARS-CoV-2 virus is genetically similar to the SARS Coronavirus of 2002 (SARS-CoV-1) (Arabi, Murthy, & Webb 2020; Kannan, Ali, Sheeza, & Hemalatha, 2020).

There are multitudes of other corona viruses that cause the common cold. These coronaviruses can become infective when they attain an animal reservoir that provides an adequate cellular environment wherein the virus can multiply and acquire a series of advantageous genetic mutations. These mutations enable the virus to cross into other species, infect, and multiply within human hosts effectively (Abdel-Moneim & Abdelwhab, 2020). With the large population of Wuhan and lack of early containment of the disease, SARS-Co-2 did spread rapidly making WHO to declare the disease a pandemic on 11th March 2020 (Sohrabi, Alsafi, O'Neill, Khan, Kerwan, Al-Jabir & Agha *et al*., 2019). SARS-CoV-2, SARS-CoV-1 and Middle East respiratory syndrome coronavirus (MERS-CoV) have been found in some species of bats (Li *et al*., 2005; Zhang, Wu & Zhang, 2020).

The intermediate hosts of SARS-CoV-1 and MERS-CoV viruses have been found to be civet cat and camel respectively while pangolins are the natural reservoir of SARS-CoV-2. Identification of SARS-CoV in animals associated with the wildlife trade in southern China (Li Q, Guan, Wu, Wang, Zhou, Tong, & Xing, 2020) have led to interest in unravelling the true source and spread of CoVs of different origins (Shereen*,* Khan, Kazmi, Bashir, & Siddique*,* 2020).

1.2 Signs and symptoms of Covid-19

The reported symptoms of COVID-19 include fever, dry coughs, shortness of breath associated with respiratory illness, muscle pain, headache, new loss of taste or smell, sore throat, chills, repeated shaking with chills and diarrhoea. Symptoms may appear 2-14 days after exposure to the novel coronavirus (WHO, 2020; Cascella, Rajnik, Cuomo, Dulebohn & Di Napoli, 2020).

1.3 Transmission and spread of SARS-CoV-2

Evidence shows that COVID-19 is often transmitted through droplets generated by coughs and sneezes. It can also be transmitted when people touch contaminated surfaces and then touch their face, nose or mouth (Shereen *et al.,* 2020). Epidemiologic, virologic, and modelling reports on transmission of SARS_CoV-2 support the possibility a healthy person getting infected from persons who are pre-symptomatic (SARS-CoV-2 detected before symptom onset) or asymptomatic (SARS-CoV-2 detected but symptoms never develop) (Furukawa *et al*., 2020).

Many questions about how, exactly, SARS-CoV-2 began to spread in people remain unanswered. It is speculated that SARS-CoV-2, emerged and spread in the city of Wuhan, China. Initial indications pointed to the wet market where fish and other wildlife are sold. Western media outlets have been quoted reporting that the virus was probably engineered in a laboratory but the intermediate of pangolin has brought in a new twist, making the origin of Covid-19 a mystery (Chaturvedi *et al.,* 2020). Figure 1 summarizes the different speculations on the origin of Covid-19.

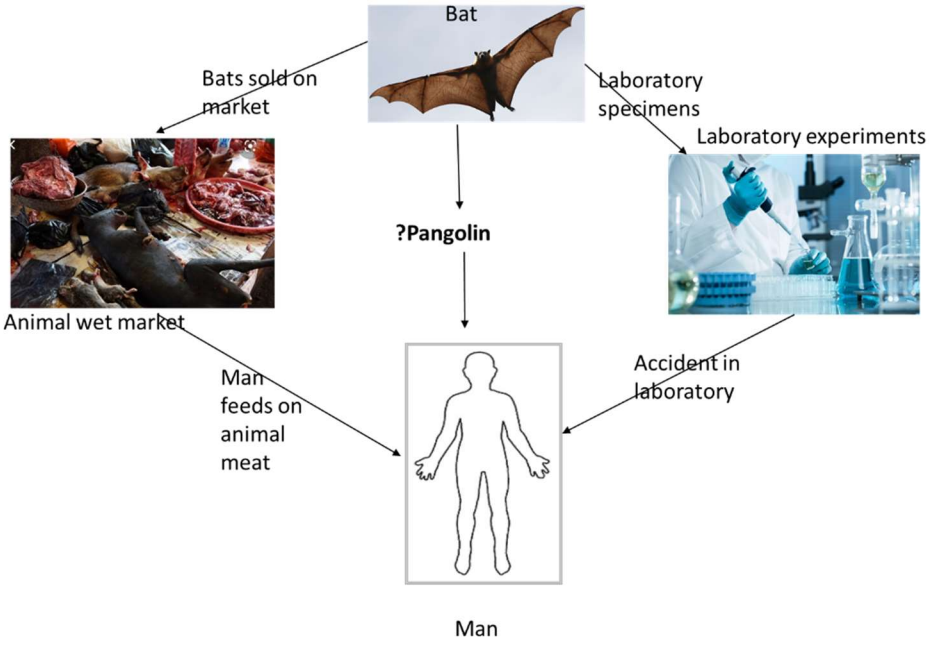

Figure 1: Possible origin and spread of SARS COV-2

1.3.1 The wet market argument

The literature indicates that the novel coronavirus likely jumped from a primary reservoir (e.g. horseshoe bats) to an intermediary reservoir, possibly generating an outbreak among wild animals in at least one wet market in Wuhan, China (Cohen, 2020 and Li *et al*., 2020). The virus first infected multiple individuals working at, or visiting, the Huwan Seafood Wholesale Market at an early stage, initiating multiple chains of transmission that ensured sustained transmission in the human population (Yang *et al.,* 2020). While details of the origin of the outbreak remain uncertain, significant evidence strongly links the Huwan Seafood Wholesale Market in Wuhan with the early spread of the novel coronavirus, SARS-CoV-2 among humans (Li *et al*., 2020).

Preliminary findings by Chinese scientists reported that the virus seen in the first group of patients was connected to environmental samples collected at the Wuhan wildlife wet market. It is likely that SARS-CoV-2 originated from the bat. The big question that remains unanswered is how it spread to man. The origin of the novel coronavirus outbreak remains a mystery, with experts disagreeing on

whether the virus came from either a laboratory or a wet market in the city of Wuhan, China. On May 28, 2020, a top Chinese health official indicated that the coronavirus did not originate in a Wuhan seafood market as many scientists had believed. While the scientific community has concluded the virus is natural and not manmade or genetically modified, the possibility that the virus escaped from a laboratory in Wuhan remains (Jelnov, 2020).

1.3.2 Laboratory engineering of SARS-CoV-2

Claims have been made that SARS-CoV-2 originated in a laboratory in Wuhan, China — and not naturally in wildlife. The Trump administration, for example, has been on the frontline of this theory. However, scientists have been sceptical about this school of thought because there is no definitive proof to support this allegation.

According to virus researchers, there is virtually no chance that the new coronavirus was released as a result of a laboratory accident in China or anywhere else. Accredited laboratories have standards and protocols to observe and follow and therefore cannot make such a mistake without being discovered (Tibbets *et al*., 2020). Several scientists familiar with laboratory accidents and how research on coronaviruses is conducted, have made an assessment and cast doubts on claims that a mistake may have unleashed the coronavirus on the world (Kumar, 2020; Bolsen *et al*., 2020).

1.3 Spread of COVID-19

SARS-CoV-2 is transmitted through direct contact with respiratory droplets of an infected person which is generated through coughing and sneezing. Touching the eyes, nose, mouth after touching surfaces contaminated with the virus also spreads the disease. The COVID-19 virus may survive on surfaces for several hours, but cleaning the surfaces with 70% alcohol or soap and water can kill it. An infected person can spread the disease to healthy individuals through physical contact. To minimize the spread, the infected person is put under isolation and all the contacts he or she made traced and put under a fourteen-day quarantine. The COVID-19 contact tracing process has proven to be difficult, time-consuming, labour-intensive, and invasive — requiring rigorous, methodical execution and follow-up. It is faced by many challenges such as contagious nature, lack of qualified staff to carry out the exercise, pre-symptomatic and asymptomatic individuals who can still spread the disease, lack of testing kits, lack of funds and infrastructure.

On the onset of the disease, people above 58 years of age and with chronic medical conditions such as diabetes and heart disease, were considered the most vulnerable. However, as the infection continued to spread all ages have been infected.

1.4 Vaccine and treatment for COVID-19

With the developments of some COVID-19 vaccines such as Pfizer, Moderna and AstraZeneca after a year of research, the question of effectiveness, authorization and distribution remains a daunting one (WHO, 2020). Scientists are working around the clock to prove the efficacy of the vaccines. However, many of the symptoms can be treated and getting early care from a healthcare provider can make the disease less dangerous. Several clinical trials are being conducted to evaluate potential therapeutics for COVID-19. Indeed, in Africa some people have reverted to the use of traditional medicine (WHO, 2020).

As with other respiratory infections like the flu or the common cold, public health measures are critical to slow the spread of illnesses. Public health measures are everyday preventive actions that include staying home when sick; covering mouth and nose with flexed elbow or tissue when coughing or sneezing; disposal of used tissue immediately; washing hands often with soap and water; and cleaning frequently touched surfaces and objects.

2 Lessons from COVID -19

2.1 Lessons on origin, transmission, spread, control and vaccine development

Historically, there have been riddles and puzzles to be solved on all new infections and it has often taken several years to solve or unravel them. To determine how a pathogen suddenly emerges in people requires a lot of research and investigation, which applies to COVID-19 too. The mystery of origin of the virus and the related conspiracy theories on spread of the virus, being asymptotic before infection as well as challenges of contact tracing make elimination/eradication of the disease uncertain if not impossible. There is a need for the scientists to develop more digital methods of contact tracing. This will help reduce the cases of asymptomatic and presymptomatic spreading the disease.

Secondly, the mystery of the biology of the virus, mutation of the virus has caused a challenge on vaccine development. There have been challenges also on vaccine issues such as human challenge trials and intentional exposure of

volunteers. In the USA vaccine trials were slow to recruit Black and Latino participants. Issues and mystery of long-haul patients/ COVID-19 or condition of COVID-19 fighters even after recovering from the disease are among lessons picked up by science and researched on. Similarly, there is the issue of recurrence in countries after flattening of the curve. What are the mistakes made after flattening of the curve and reopening of daily activities reinstituted? Could there be lessons for science here such as the possibility of long expert arrogance? Issues and concerns related to herd immunity also need to be considered. All in all, this calls for everyone to be on the alert, follow the laid down health protocols and take responsibility to add to fighting this pandemic.

2.2 Lessons in relation to environmental balance and sustainability

The new coronavirus (SARS-CoV-2) has created an extraordinary social, demographic as well as environmental impact in most countries of the world. The COVID-19 pandemic has affected almost every country on the planet, with 31 658 573 cases of COVID-19 reported, including 971 869 deaths as at 23rd September 2020 according to the European Center for Disease Control while the World Health Organization (WHO) reported 31,425,029 confirmed cases of COVID-19, including 967,164 deaths. Currently, most countries have tried to fight the spread of the virus with massive COVID-19 screening tests and establishing public policies of social distancing. Obviously, the priority revolves around people's health which has been adversely affected by the pandemic.

2.2.1. Lessons from COVID-19 pandemic: Positive impacts

In these uncertain times, some positive impacts of the pandemic have been identified. Indirect impact of the pandemic on the environment has been inadequately analysed. The first studies estimated a positive indirect impact on the environment. Due to the coronavirus outbreak's impact on travel and industry, many regions and the planet as a whole experienced a drop in air pollution. Climate experts predict that greenhouse gas (GHG) emissions could drop to proportions never before seen since World War II (Global Carbon Project, 2020). This is a result of the social distancing policies adopted by the governments following the appearance of the pandemic. For example, in Hubei province (China), strong social distancing measures were implemented in late 2019. These measures affected the country's main economic activities. As a result, power plants and industrial facilities halted their production. Also, the use of vehicles decreased

considerably. All these led to a dramatic reduction in the concentrations of Nitrogen Dioxide (NO_2) and Particulate Matter that have a diameter of less than 2.5 μm (PM 2.5) in the main Chinese cities. China implemented strict traffic restrictions and self-quarantine measures to control the expansion of SARS-CoV-2. These actions generated changes in air pollution. Due to quarantine, NO_2 was reduced by 22.8 $\mu g/m^3$ and 12.9 $\mu g/m^3$ in Wuhan and China, respectively. PM 2.5 fell by 1.4 $\mu g/m^3$ in Wuhan but decreased by 18.9 $\mu g/m^3$ in 367 cities. These measures in China resulted in a 25 per cent reduction in carbon emissions and 50 per cent reduction in nitrogen oxide emissions, which one Earth systems scientist estimated may have saved at least 77,000 lives in a period of over two months.

In other parts of the world, air pollution dramatically reduced since governments ordered citizens to stay home to contain the spread of the new coronavirus. Main industries as well as other regular activities ground to a halt. For instance, car use reduced which caused GHGs to decrease. A significant decrease in NO_2 concentrations were observed over Rome, Madrid, and Paris, the first cities in Europe to implement strict quarantine measures. Zambrano-Monserrate, Ruano and Sanchez-Alcalde (2020) point out that although the emissions of some GHGs have decreased as a result of the pandemic, this reduction could have little impact on the total concentrations of GHGs that have accumulated in the atmosphere for decades. For a significant decline, there should be a long-term structural change in the countries' economies. This result can be achieved through the ratification of the environmental commitments made. Furthermore, the decrease in GHG emissions currently observed in some countries is only temporary.

Once the pandemic ends, countries out of necessity are expected to revive their economies, and GHG emissions will skyrocket again. This notwithstanding a good lesson learnt here is that with reductions in human activity, positive change can occur in the environment. Decreasing GHG concentrations during a short period is not a sustainable way to clean up our environment so governments should come up with measures of long-time sustained changes in human activity. There is the mystery that despite of the above the concentration of carbon dioxide in the atmosphere was the highest ever recorded in human history in May 2020.

A great lesson here is what energy and climate change experts posit that "technological, behavioral, and structural change is the best and only way to reduce emissions" and that "only when we would reduce our emissions even more than this for longer would we be able to see the decline in concentrations in the atmosphere" for example beaches are one of the most important natural capital assets found in coastal areas such as the Western Indian Ocean (Obura, Church

and Gabrie, 2012). They provide services such as tourism that are critical to the survival of coastal communities (Obura *et a*l., 2017). Non-responsible use has caused diverse pollution of many beaches in the world. The social distancing measures have caused many beaches around the world to be clean. This is because of the reduction in waste generated by tourists who visit the beaches. Furthermore, there was a general improvement in water quality reported. For example, in Venice, water in the canals cleared and experienced greater water flow. The increase in water clarity was due to the settling of sediment that is disturbed by boat traffic.

There also have been speculations of wildlife recoveries due to the COVID-19 pandemic. Fish prices and demand for fish have decreased due to the pandemic and fishing fleets around the world sit mostly idle. As people stayed at home due to lockdown and travel restrictions, some animals have been spotted in cities. Sea turtles were spotted laying eggs on beaches they once avoided (such as the coast of the Bay of Bengal), due to the lowered levels of human interference and light pollution. In the United States, fatal vehicle collisions with animals such as deer, elk, moose, bears, mountain lions fell by 58% during March and April. The lesson here is that humans can learn to give space to the wildlife as well. Certain days in the year could be set aside when everybody stays at home and there is complete global lockdown for a day or two or more in remembrance of COVID-19 positively allowing some space for wildlife. Even one-week complete lockdown can be ventured into as evidently 9 months into lockdown the world has not ended. Over the years, this could have cumulative positive effect on the environment.

The imposition of quarantine measures by most governments caused people to stay at home. With this, the use of private and public transportation decreased significantly. In addition, commercial activities have stopped almost entirely. All these changes caused noise level to drop markedly in most countries. This calls people to look into more environmentally friendly methods of transportation such as cycling and walking to work depending on the distance. These two options have been resorted to and worked well during this period of lockdown. The now apparent societal shifts like telecommuting and the use of virtual conference technology should be entrenched as this may have a more sustained impact beyond the short-term reduction of transportation use and costs. Indeed, now more than ever before there is the need to focus more on renewable energy and climate friendly projects, jobs and endeavors for governments, non-governmental organization, city planners, communities, community and faith-based organizations.

2.2.3 Lesson from COVID-19 pandemic negative impacts

Despite the positive indirect effects on the environment, the new coronavirus has generated negative indirect ones as well. For example, in the USA, some cities have suspended recycling programmes fearing the risk of spreading the virus in recycling centres. In Europe, nations particularly affected, sustainable waste management has been restricted. For example, Italy has prohibited infected residents from sorting their waste. Recycling is a common and effective way to prevent pollution, save energy, and conserve natural resources (Varotto and Spagnolli, 2017; Ma *et al*., 2019).

Another worrying negative impact on the environment is increased waste. The quarantine policies, have led consumers to increase their demand for online shopping and home delivery. Consequently, organic waste generated by households has increased. In addition, food purchased online is shipped packed, so inorganic waste has also increased. Medical waste is also on the rise. Hospitals in Wuhan produced an average of 240 metric tons of medical waste per day during the outbreak, compared to their previous average of fewer than 50 tons (ibid).

In other countries such as the USA, there has been an increase in garbage from personal protective equipment such as masks and gloves (Calma, 2020). This is amid a situation where the world is burdened with plastic waste. Besides personal protective equipment, a considerable increase in plastic use has been related to requirements packaging, and single-use items. Collectively, these shifts in hospitals and regular life may worsen environmental issues with plastics. The lesson here is that there should be vigilance in handling medical waste such as contaminated masks, gloves, used or expired medications, and other items which could easily be mixed with domestic waste.

However, they should be treated as hazardous waste and disposed of separately. Furthermore, this type of waste must be collected by specialized municipal operators or waste management operators (UN, 2020). Along these same lines, the UN Environment Program urged governments to treat waste management, including medical, domestic, and other waste, as an urgent and essential public service to minimize possible secondary health and environmental effects (ARCplus, 2020).

China has asked wastewater treatment plants to strengthen their disinfection routines (mainly through increased use of chlorine) to prevent the new coronavirus from spreading through the wastewater. However, there is no evidence on the survival of the SARS-CoV2 virus in drinking water or wastewater

(WHO, 2020b). On the contrary, the excess of chlorine in the water could generate harmful effects on people's health (Koivusalo and Vartiainen, 1997).

The COVID-19 pandemic may also have provided cover for illegal activities such as deforestation of the Amazon rainforest and poaching in Africa for bush meat and for high-value products like rhino horn and ivory. The status of environmental diplomacy efforts and investment in green energy technologies could suffer because of these activities.

While carbon emissions dropped during the pandemic, methane emissions from livestock continued to rise. Methane is a more potent greenhouse gas than carbon dioxide. This emphasizes that environmental issues and challenges and ways of addressing them are complex and require inter-disciplinary, inter-government, inter-agency and everyone to be a player in the effort. There is of course the fear of the unknown; the mystery that the virus crisis may bring other environmental problems that may last longer and maybe more challenging to manage if countries neglect the impact of the epidemic on the environment.

2.3 Lessons in relation to ethics

Even the very fact that there is one school of thought that believes the coronavirus 2 (SARS-CoV-2) was intentionally genetically engineered in a laboratory puts to question the bioethics of research scientists. What moral justification could possibly be for such an action? Advocates of utilitarian ethical theories insist that the point of morality as a social institution is to promote human welfare by minimizing harm and maximizing benefits (Beauchamp and Walters, 1994). A lesson worth noting here is that there is need in this 21st century to revisit virtue ethics as held by Aristotle, who says a virtuous character is neither natural nor unnatural; it is cultivated and made part of the individual, much like a language or tradition. This viewpoint should be incorporated seriously in our development, training and making of natural and social scientists. Ethical considerations should be compulsory in any curriculum of learning, teaching and various discourses.

The issue of respect for autonomy of nations, research institutions and individuals should be revisited. Many issues in bioethics concern failures to respect autonomy, ranging from manipulative under-disclosure of pertinent information to non-recognition of a refusal of medical interventions. As technology grows by leaps and bounds international community through its institutions like WHO, should indeed keep an eye on each other because as COVID-19 has demonstrated there are no boundaries to those affected by the pandemic. We share one planet and we should all be responsible for it. The

mystery of what complex technology the future holds and who holds it should be a wakeup call for every government, institution, researcher, scientist and individual person to be concerned. Learning from the current pandemic and previous ones and indeed the history of the Eugenics programmes in the United States and Germany, one may appreciate the fact that the world is not just for a few individuals but for all God's creation. Indeed, when the vaccine for COVID-19 is developed let it not further divide people particularly along socio-economic lines.

COVID-19 pandemic has brought out the differences in individual persons, governments and institutions not only in governance issues but also in relation to ethics, morality and respect for human dignity while revealing egocentric tendencies. Nevertheless, the pandemic brough out the best of human nature exemplified by the many people in the medical profession, essential services, researchers, philanthropists who have donated large sums of money, effort, time, etc. and who continue working tirelessly to address the multifaceted aspects of COVID-19 pandemic.

Whereas according to Wikipedia "other positive impacts on the environment include governance-system-controlled investments towards a sustainable energy transition and other goals related to environmental protection such as the European Union's seven-year €1 trillion budget proposal and €750 billion recovery plan "Next Generation EU" which seeks to reserve 25% of EU spending for climate-friendly expenditure", many individuals have seen this pandemic as a God-sent opportunity to enrich themselves. The Standard Newspaper in Kenya reported that:

"Against the backdrop of businesses shutting down and millions of people losing their livelihoods as a result of the Covid-19 pandemic, a select group of businessmen locally and globally are turning their fortunes around amid the gloom. Innovators, manufacturers, contractors and e-commerce entrepreneurs are collectively sharing the biggest part of the coronavirus millions as the world moves away from traditional ways of doing business"

Globally, Jeff Bezos, founder of e-commerce company Amazon, grew his wealth by Kenya Shillings 3 trillion because of a surge in demand for products by his companies. According to the Bloomberg Billionaires Index, Bezos is one of the few billionaires to have seen an increase to his net worth since the beginning of 2020. Others on the list include Facebook's Mark Zuckerberg who added Sh2.5 trillion to his net worth, according to Americans for Tax Fairness and Institute for Policy Studies Program for Inequality. These are examples of growing wealth in times of disaster by legally and rightfully doing a booming business.

However, in many countries Kenya included this is not the case and a lot of ethical, legal, moral, religious issues arise for those who blatantly are unscrupulous taking advantage of the pandemic being referred to as COVID-19 billionaires. Wesangula, 2020 of the Standard Newspaper goes on to report that "In Kenya, some of these companies have moved from struggling entities, barely breaking even a few months ago, to banking hundreds of millions of shillings in a matter of months, thanks to winning government tenders. For this select group of companies, there has been no blessing larger than the pandemic since March 13 when Kenya announced her first confirmed case of the virus". The unfortunate aspect of all these is that the contract awarding for Personal Protective Equipment and KN95, hand sanitizers, infrared thermometers, renovation of hospitals and other public facilities is shrouded in corruption.

Tanzania which took a different approach to Covid-19 (ITUC-Africa, 2020) in contradistinction with its neighbouring countries particularly Kenya, Uganda, Rwanda, Mozambique, Malawi, Zambia and the Democratic Republic of the Congo, has also been challenged to account for the funds to contain the pandemic.

2.4 Lessons from poorer communities

Low-income earners have been hit harder by the pandemic, particularly as they depend on petty businesses or support from their relatives whose incomes were also dramatically reduced. With businesses closed around university campuses such as St. Augustine University of Tanzania and the Catholic University of Eastern Africa in Kenya people's livelihoods were completely curtailed for several months. This was true for other places and communities in Africa (Buheji, Van Leusen & Kwapinski, 2020. In richer countries the impact was arguably different. Now, with some vaccines being rolled out it remains unclear how low-income earners will be reached so that no one is left (United Nations 2015 & 2018) behind as inclusive development dictates.

2.5 Lessons from the Scriptures

The Scriptures shows that the world was inherently perfect. However, human beings have corrupted it. For example, Genesis 1:31 states "And God saw everything that he had made, and, behold, it was very good". Indeed, God is a great architect. Psalms 104: 24-25 "O Lord, how manifold are thy works! in wisdom hast thou made them all: the earth is full of thy riches. So is this great and

wide sea, wherein are things creeping innumerable, both large and small". God not only created the Earth, but also calls on man to protect, respect and nurture it. Mankind should as much as possible let God's creatures stay in their natural environment. God the great designer created the earth with all of its interconnected processes, living and non-living, for their specific purpose. Man is just part of the creation of God and should be careful and appreciative of his shortcomings when he endeavours to understand nature through research. During this time of the COVID-19 pandemic, man and woman should reflect and act in accordance with what God expects of them. Indeed, a big reminder of this is well captured in Leviticus 25:23-24 "The land shall not be sold for ever, for the land is mine; for you are strangers and sojourners with me. And in all the land of your possession, ye shall grant a redemption for the land."

The protection of nature includes the protection of humankind. It is everyone's responsibility and especially people in leadership positions to work towards the promotion of life. The role of researchers, scientists, political leaders and institutional leaders is crucial in this endeavour. The Scripture criticised leaders who pretended to serve others especially those in need but to the contrary, what they cared about was personal gain. The criticism is still relevant to-date, with some shepherds feeding on sheep rather feeding them. This precisely why during the pandemic, states have been called upon to account for the funds earmarked for combating COVID-19. That is why Ezekiel 34:2-4 warns**:** "Son of man, prophesy against the shepherds of Israel; prophesy and say unto them: 'Thus sayeth the LORD God unto the shepherds: Woe unto the shepherds of Israel that do feed themselves! Should not shepherds feed the flock? You eat the fat, and ye clothe yourselves with the wool, ye kill them that are fed: but ye feed not the flock".

Conclusion

This paper has attempted to articulate the complexity regarding the origin and spread of the novel coronavirus disease. Schools of thought have differed between a natural occurrence and man's creation of the virus. It takes a professional mind to tell the difference and inform society accordingly. Professional ethics is particularly fundamental to the promotion of life in the context of sustainable development or ecological stability, paying particular attention to inclusive development. While the paper has pointed out the limitations of science in terms of the origin of COVID-19 as well as the limitations of governance in the response to the pandemic, the authors have pointed out positive and negative effects of the

pandemic. The failure of modern science and technology of the 21st Century to explain certain realities of the pandemic is evidence of the limitations of the human brain that needs a transcendental enlightenment from a superior being as more resources are channelled to vigorous research.

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