

The Impact of COVID-19 on the Ecological System: Analyzing the Environmental Response to Achieve Sustainability



Wahiba Seghiri

University of Batna 1, Algeria, wahiba.seghiri@univ-batna.dz

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Abstract:

By the close of 2020, the COVID-19 pandemic had spread globally. In response to the World Health Organization's announcement of a worldwide health crisis, it was crucial to set up response strategies at all tiers. At first, the global emphasis was on health and international security, with little consideration for potential impacts on other sectors. This research investigated the environmental consequences of the pandemic from a health security standpoint and looked for innovative methods to safeguard the environment in the aftermath of COVID-19.

The results suggest that, despite the clear environmental impacts and the drive for green recovery efforts, the ongoing nature of the pandemic and global uncertainty about its longevity have impeded the prioritization of environmental issues and ecosystems. While the pandemic has opened up real possibilities for the adoption of environmentally friendly practices, the actual execution of these practices has been sluggish, mainly due to the enduring perception of COVID-19 as a health crisis with long-term effects.

Keywords: Environmental response; Sustainability requirements; Green New Deal; Green Recovery.

* Corresponding author: Wahiba Seghiri, wahiba.seghiri@univ-batna.dz

Introduction:

Responding to economic, social, and environmental challenges has become one of the most important determinants of comprehensive and sustainable development. The world has witnessed significant shifts in developmental concepts and orientations following the noticeable change in the prioritization of development dimensions. The environmental dimension is considered one of the most crucial aspects of sustainable development in the present age. Although discussions about the environment are not new, dating back to the 1950s, the current focus on environmental crises, climate change issues, and their impacts on the quality of life has become a focal point for many countries and systems, especially those with major economies.

In an attempt to shift towards environmentally friendly approaches to emerge from environmental crises and achieve societal well-being and justice, the world was confronted with the global pandemic COVID-19, a health crisis that has demonstrated the fragility of systems in dealing with such crises across their political, economic, health, and environmental dimensions over the long term. Nevertheless, in the long run, and after the first wave of the pandemic subsided, global opportunities emerged to reconsider the mechanisms that must be followed to preserve ecological systems during and after crises.

This study attempts to discuss the environmental gaps created by the global health crisis in the context of searching for the fate of ecosystems in a post-COVID world. The main challenges relate to the crisis management mechanisms that must be adopted even after the pandemic crisis ends and is overcome. In light of the above, we can pose the following central question:

Has the pandemic been able to rebuild new standards for preserving ecosystems on a global scale?

The study aims to achieve a set of objectives that can be summarized as follows:

- Understanding the new environmental trends post-COVID-19.
- Addressing some mechanisms for recovery from the global environmental crisis in the post-lockdown world.
- Attempting to evaluate the new pathways for environmental conservation imposed by the repercussions of the pandemic.

To grasp the various aspects of the subject, the study has been divided into two main sections as follows:

First Section - Health security and the environmental gap: Has the pandemic created an environmental crisis?

Second Section - The New Deal response to the challenges of the pandemic: The Green New Deal and emerging from the crisis.

1. Health Security and the Environmental Gap: Has the Health Pandemic Created an Environmental Crisis?

The world experienced a comprehensive public health emergency following the outbreak of the coronavirus pandemic, COVID-19. Indicators highlight the societal, economic, and environmental changes that occurred during the pandemic, primarily caused by the search for resources to maintain the health security of communities. While the coronavirus may not be considered the first type of epidemic to affect global health security, it has managed to change the hierarchy of health issues worldwide. It has actually led to the destruction of the global economy and threatened various dimensions of human security, which have seen a noticeable decline in attention compared to the health aspect.

The challenges that the World Health Organization faces indicate how nations have restricted the concept of collective health security and its global scope. Global health is more closely tied to state security than to human security, and it also prioritizes the protection of certain states and populations over others. Consequently, nations with greater financial and diplomatic clout in institutions like the World Health Organization and the United Nations Security Council can craft decisions concerning significant threats. This underscores the common assertion that global health security is primarily concerned with "protecting the West from the rest." However, this perspective has been overturned due to the fallout from COVID-19 (Harman, 2021, p. 606).

The issue posed by the coronavirus is the inability to predict the future direction of the pandemic. Consequently, it has become difficult for major countries, which were dominant in shaping policies regarding various security threats, to determine the course of the threat. Post-pandemic health security has become one of the greatest challenges faced by nations. With the rapid evolution of its repercussions across various fields, the transition to discussing global health security has become an urgent necessity. COVID-19 has transformed from a health issue into a matter of international security and peace. The World Health Organization has directed its focus towards considering the pandemic as the primary health issue at present; a health issue with political, economic, and environmental dimensions that transcend borders.

The COVID-19 pandemic has monopolized healthcare systems around the world and has had an indirect impact on the diagnosis and treatment of other diseases. It has been necessary to postpone the treatment of other medical conditions, such as cancer, in many cases due to the direct threat of COVID-19, which has consumed healthcare systems and their resources. Additionally, scientific research globally has focused solely on COVID-19, leading to delays in

research and causing breakthroughs in other health issues to be sidelined. Other infectious diseases such as malaria, HIV/AIDS, and tuberculosis have been marginalized, despite being significant health problems (Cuffari, 2022, <https://bit.ly/34tLUP0>).

The threats to global health security due to the outbreak of previously known infectious diseases remain, and yet, this has not prompted nations to take the necessary preventive measures due to the absence of effective health systems that respond to sudden health crises, especially in fragile systems with vulnerable populations. This compels us to reconsider the performance of the global community, which has indeed proven its weakness in containing the health crisis that led to an unexpected collapse of the global economy.

The challenges faced by health security during the pandemic are not limited to the marginalized infectious diseases but also extend to the mental well-being of individuals. The repercussions of the COVID-19 pandemic on mental health have necessitated a greater focus on the needs of individuals suffering from psychological disorders and on mental health issues that affect healthcare workers and the general population. There is now a need for public mental health interventions during the comprehensive study period to address the expected increases in the prevalence of psychological disorders and the deterioration of mental health among individuals (Lange, 2021, p. 34).

In this case, it is essential to recognize the magnitude of the additional economic costs that various countries must bear to provide mental health care, which may even exceed the costs of investment directed towards finding solutions to emerge from the crisis. This will place the world in an additional crisis characterized by an increase in the economic and living standards gap between different countries and groups, especially developing countries that are unable to cope with the pandemic. Consequently, it necessitates a global, multilateral response to manage the crisis itself to avoid disparities between the North and the South.

From the perspective of achieving global health security, the global pandemic has shown indirect effects that are no less dangerous than the direct impacts on health and international peace. Researchers have considered the economic deviation and the restriction of industrial activities to be the most serious repercussions brought about by COVID-19, which caused a financial crisis, not to mention the crisis that the world has not yet emerged from. However, the extent of the impact has exceeded the economic dimension to the environmental one. Despite the fact that preventive measures to protect against the pandemic, such as social distancing, quarantine, and restricting economic activities, initially seemed to have positive effects on the environment and climate, the environmental reality was able to completely deny that.

During the first months of the pandemic, air quality improved globally in many countries. The restriction of movement led to reduced traffic, which in turn decreased environmental pollution and improved air quality. This improvement is not only beneficial for the environment and people but also has the potential to control the spread of the virus. A significant reduction in air pollution was observed mainly in major cities, such as the key cities in China during this period, especially the reduction of nitrogen oxide emissions from vehicles during fuel combustion and power plants during the lockdown, which had clear environmental benefits (Buddha & et al, 2020 , p. 20).

COVID-19 has had a severe impact on the environment, as the use of insecticides, detergents, single-use plastic products, and the like has multiplied several times in the months following the spread of the virus, causing significant environmental damage. The increased use of hand sanitizers has also added to the negative aspects. The emergence of personal protective equipment (PPE) sets, face masks, and gloves as critical safety measures during the pandemic, due to the sudden increase in their use, may lead the environment to face negative consequences represented by increased pollution due to medical waste (Ankit et al, 2021, <https://bit.ly/3fR4o2H>).

A misunderstanding has arisen regarding the reductions in carbon dioxide emissions resulting from the disruptions associated with COVID-19, with some interpreting the short-term decreases as an indication that austerity in energy consumption may be sufficient to slow the pace of global warming. The decrease in fossil carbon dioxide emissions, proportional to the economic downturn, will be significant compared to previous reductions. For example, the peak daily reduction in carbon dioxide emissions reached 20% in the largest economies during the lockdown period, and the cumulative reduction in global emissions was about 7% from January to April 2020. However, these daily reductions in scope are temporary, and the already apparent rebound in emissions supports the likelihood of an annual emissions decrease of less than 7% (Rume & S.M, 2020, <https://bit.ly/3g65VC4>).

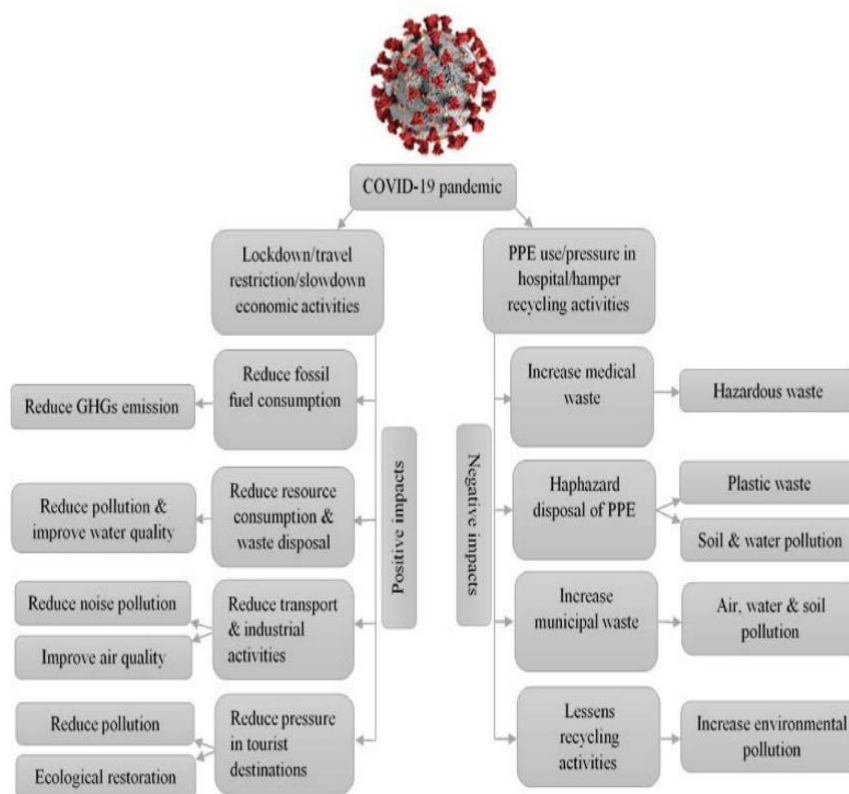


Figure 01: Positive and negative environmental effects of COVID-19 pandemic

Source: Tanjena Rume and S.M. Didar-UI Islam, Environmental effects of COVID-19 pandemic and potential strategies of sustainability, Heliyon 6: (2020), on the site : « <https://bit.ly/3g65VC4> »

It cannot be denied that the COVID-19 pandemic has had a positive impact on the environment. Countries that implemented lockdowns and regulated the movement of citizens to stop the spread of the coronavirus infection witnessed a significant decrease in pollution and greenhouse gas emissions, which undoubtedly affected the quality of the environment. Initially, this recovery of the lost environment is an indicator that environmental degradation can be reversed. However, there are stronger indications that the positives associated with reducing greenhouse gas emissions due to COVID-19 will be short-lived. This means that, in the long term, it is not expected that the trends associated with climate change, which many consider to be positive effects of the pandemic, will alter. Therefore, mitigation and adaptation strategies must be vigorously followed in the post-

COVID-19 era, as the reduction in emissions is only related to the duration of the pandemic.

2. The response to the pandemic challenges: the Green New Deal and the exit from the crisis:

The various aspects of sustainable development are inherently interconnected, and thus any approach related to one dimension of sustainable development can preserve biodiversity, achieve food security, and emerge from the climate change crisis. To maintain ecosystems, we must follow environmentally friendly policies in both the economic and health sectors; policies that contribute to the preservation of ecosystems at much lower costs compared to those imposed by the COVID-19 crisis. The unexpected repercussions of the pandemic have provided opportunities for new insights to reset the terms of the global debate on environmental issues. The contradiction between the economic and environmental dimensions that occurred during the early periods of the pandemic did not last long, especially after the focus was placed on the mutual impacts between ecosystems and food security primarily. The question posed is: How can the crisis be turned into an opportunity?

The 2030 Agenda for Sustainable Development (United Nations General Assembly 2015), Though still unfinished, it provided a comprehensive roadmap for achieving the Sustainable Development Goals. However, the 2019 Global Sustainable Development Report indicated that based on pre-pandemic trends, none of the Sustainable Development Goals would be met by 2030. The 2020 Sustainable Development Report further estimates that the pandemic has worsened this trend. (Duflot & al, 2020, <https://bit.ly/3x4IC0R>), In addition to the crises of climate change, the conservation of biodiversity, and many other environmental threats, the emergence of the COVID-19 crisis, characterized by its infinite scope and unknown severity of impact, has contributed to slowing down global efforts to find actual solutions to protect the environment. Due to the intersection of environmental crises during the pandemic, the utmost priority was to address the COVID-19 crisis.

Before the pandemic, what linked the COVID-19 crisis to environmental crises, especially the climate change crisis, was the similarity in practices. According to a research paper prepared by the Smith School for Enterprise and the Environment at Oxford University, the similarities include 'market failures, externalities, international cooperation, complex science, issues of system resilience, political leadership, and action that depends on public support.' Therefore, the lessons learned from the current pandemic will have implications for future dealings with the climate crisis (Kemp, 2020, <https://bit.ly/3ze4WXO>), Consequently, it is essential to address crises with high global risks at multiple levels by taking preventive measures specifically aimed at climate preservation and

by continuing to support environmental issues, as they have become a critical matter in achieving human security in all its dimensions.

As nations work to recover from the impacts of the first wave of the pandemic, especially the severe economic downturn (considered one of the most significant crises since the 2008 financial crisis), the risk of increased emissions and pollution from renewed economic activities becomes prominent once again. Thus, it has become crucial to align all post-lockdown economic policies and strategies with a reassessment of the relationship between the economy, ecological systems, and environmental health. Rebuilding a just and healthy world is incompatible with reverting to pre-pandemic practices. In this context, the Green New Deal has emerged as a global initiative, deemed essential for navigating out of the crisis.

The New Deal concept primarily relates to plans for managing crises resulting from the inability of states to deal with current data and their incapacity to predict the outcomes of the crisis and its duration. The idea of the Green New Deal has once again imposed itself on the international stage after the noticeable environmental repercussions of the pandemic, which now pose an actual threat to individual security. The Green Deals express the possibility of decoupling the economy from environmental degradation by incorporating environmental safety modifications into various developmental policies. The New Green Deal is a response to the climate, environmental, and economic crisis, and it is a precursor to the transition towards green economy concepts. The COVID-19 pandemic has revealed the vulnerability of linear global economies, and thus, the current aim is to ensure the economy and society's ability to better deal with future crises while necessarily respecting ecological systems.

In this context, many countries - starting with the European Union, which proposed the idea of returning to the Green Deals at the onset of the pandemic - have attempted to follow new paths to recover from the pandemic and preserve the environment during the economic recovery phase. The focus in this framework revolved around the following points:

➤ **Focusing on green recovery policies:**

The concept of "green recovery" or "green resurgence" focuses on long-term policies, measures, and solutions that emphasize environmental protection and the safeguarding of ecosystems, as well as addressing climate-related issues. However, it also includes the creation of a resilient, sustainable, and inclusive society.

The orientation towards adopting environmental economic approaches through the transition to renewable energy, green economy, and clean products was a topic of discussion before the pandemic within the framework of the United Nations Sustainable Development Goals for 2030. Several talks and climate summits organized by the United Nations were scheduled but were postponed due

to the spread of the pandemic. Nonetheless, the negative repercussions of the pandemic have created new opportunities for a shift towards green approaches and green recovery policies that work to protect ecosystems, combat the climate crisis, and invest in renewable and clean energy, ultimately leading to the sought-after environmental justice from adopting these trends.

It is evident that the green recovery plan, with resources directed towards achieving the common goal of providing the necessary economic incentives for recovery, as well as promoting the transition to a low-carbon economy and adapting to climate change, alongside investing in natural capital and increasing comprehensive savings, can be a viable and effective strategy. The general environmental development plan is an important strategy for securing sustainable development and protecting the climate as a global public good. Clearly, addressing the pandemic requires taking actions in the form of new policies and changes in priorities. Although COVID-19 has become the sole crisis in the spotlight at present, being a major global threat, it should not replace measures targeting an equally or more significant global threat, which is the climate change crisis (Xepapadeas, 2020, p. 460).

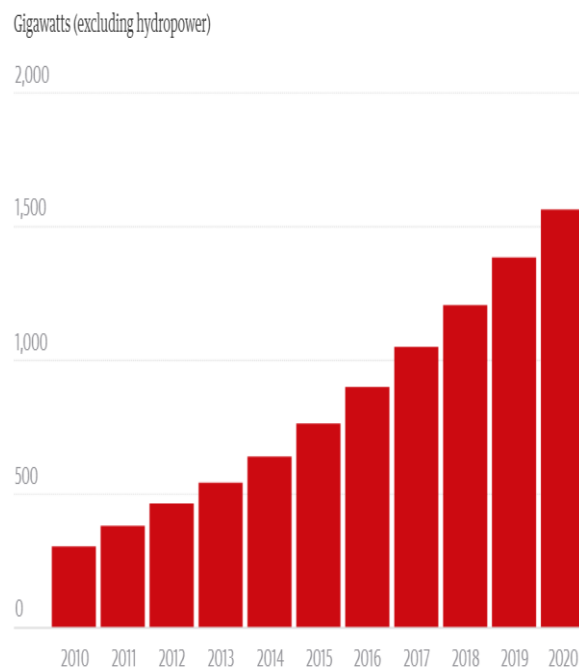
Harnessing renewable energy is considered the first step towards green economic recovery. However, after the World Health Organization declared COVID-19 a global health emergency, priorities and developmental dimensions shifted. In an attempt to bolster the global economy following the health crisis, there was an intensification in the production or use of fossil fuels, which could create a network of multiple environmental crises. Within this context, and due to the necessity of returning to the use of renewable energies, another issue added to the health crisis arises: Did the COVID-19 crisis affect the sources of renewable energy?

The key question concerning the impact of COVID-19 on renewable energy sources is how the pandemic will influence the global transition to a low-carbon economy, particularly the integration of renewable energy sources. The pandemic has led to a reduction in energy consumption, thereby increasing the relative share of renewable energy. Conversely, the pandemic has negatively affected both the fossil fuel industry and the capacity of many governments to continue supporting the renewable energy sector. As a result, it remains uncertain how these industries will recover. To comprehensively understand the impact of COVID-19 on renewable energy sources, an advanced dynamic model is needed to capture the interplay between energy demand, energy prices, and the generation of both fossil fuels and renewable energy (Navon & et al, 2021, p. 12).

The International Energy Agency's report indicates that nearly 90% of new electricity generation in 2020 will be renewable, with only 10% derived from gas and coal. This trend positions green electricity to become the predominant energy source by 2025, overtaking coal, which has been the leading source for the past fifty years. The increasing commitment to addressing the climate crisis by reducing

carbon emissions has made renewable energy more appealing to investors. According to the International Energy Agency, stocks of renewable equipment manufacturers and project developers have outperformed most major stock market indices, with the stock value of solar energy companies more than doubling since December 2019 (THE GUARDIAN, <https://bit.ly/3iuOFrO>).

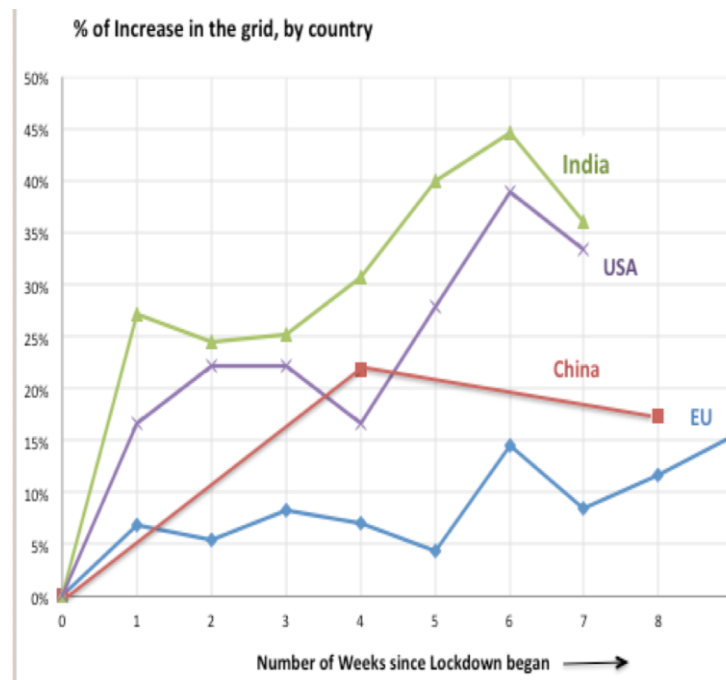
Figure 02: Global renewable energy capacity has grown fivefold since 2010



Source: Guardian graphic, on the site « <https://bit.ly/3iuOFrO> »

Figure 03: The evolution of demand for renewable energies after the lockdown.

Across the world, Renewable Energy demand jumped after the COVID-19 Lockdown



Source: Nelson Mojarro, "COVID-19 is a game-changer for renewable energy. Here's why", on the site: « <https://bit.ly/2UdoTOz> »

Observations from Figures 02 and 03 indicate that prior to the health crisis, progress in clean energy technologies was promising. However, with the onset of the health crisis, the energy sector experienced contradictions due to the focus on healthcare systems. The lockdown restrictions implemented due to the COVID-19 pandemic led to a decrease in energy-related emissions and a reduction in demand, which logically resulted in an increased share and demand for renewable energy sources. On one hand, while there has been a noticeable increase in the demand for renewable energies, the pandemic has also threatened energy systems worldwide. The crisis has curtailed investments and threatens to slow down the expansion of key clean energy technologies. Therefore, the exploitation of renewable energies is contingent upon economic growth and the advancement of development, in order to understand the interconnected variables that have led to a decline in interest in clean energies.

➤ **Focus on enhancing environmental health :**

The COVID-19 pandemic continues to pose a serious threat and remains a primary global concern despite the subsidence of the initial waves of the outbreak and the resurgence of many activities. The global environmental health community is fully aware of the environmental threats that will persist in the post-pandemic world. Various health systems around the world have attempted to respond to the COVID-19 crisis while leveraging its diverse implications to understand how environmental threats interact with global health security and how the world can recover from the COVID-19 crisis in ways that enhance environmental health, in addition to considering long-term issues related to climate and other environmental changes.

Healthy ecosystems and the services they provide around the world play an important role in maintaining livelihoods, cultures, and economic growth. As the current pandemic has shown, they also protect global health. Organizations around the world, including the United States-based Planetary Health Alliance, are increasingly focusing on how human-caused disruptions in Earth's natural systems affect human health. Understanding the challenges related to environmental health and working to address them requires coordinated and multinational efforts, as well as effective health systems capable of preserving the environment. Thus, enhancing planetary health through environmental security has become an integral part of charting a path forward in a world rebounding from the pandemic (Brewington, 2020, <https://bit.ly/3w3IPTc>).

The social determinants of environmental health—such as low income, lack of access to safe drinking water and food, poor health conditions, and inadequate infrastructure—play a significant role in interacting with the ongoing pandemic. These conditions also influence the severity of the pandemic's impact. There are numerous challenges, particularly in developing countries and areas with vulnerable populations, where predicting the exact outcome of the health crisis with an unknown duration is impossible. However, its multidimensional effects can be mitigated through effective strategies and multidisciplinary approaches, which align with the One Health concept aimed at protecting environmental health (Maipas & et al, 2021, p.03).

Adopting the One Health concept helps create a necessary set of guidelines for the proper management of such health crises in the future. Dealing with environmental health issues with a comprehensive global standard that applies to various countries and societies, whether advanced or developing, unable to respond to health crises, is essential. Therefore, it is necessary to discuss the environmental impacts resulting from the pandemic in the context of One Health and develop strategies to mitigate the severity of future inevitable pandemics. Facing current and future health and environmental crises depends on the continuous analysis of environmental risks and their multilateral management.

➤ **The genuine shift towards a circular economy :**

The Covid-19 pandemic has exposed the fragility of global systems in safeguarding the environment, health, and economy. Consequently, numerous voices from governments, corporations, and civil society have advocated for a universal response to the pandemic's devastating effects that also addresses other global challenges. A coalition of 180 European politicians, business leaders, members of the European Parliament, and environmental activists has urged the redirection of investments towards establishing a more resilient 'new European economic model'. Additionally, over 100 investors representing \$11.9 trillion have demanded a green recovery, emphasizing that investment and policy decisions will shape the trajectory of economic recovery in both the short and long term (Banks & Gravis, 2020, p. 07).

The circular economy is considered a new model for achieving economic recovery after the pandemic by redesigning the economy into a thriving, inclusive, and low-carbon economy that mitigates the risks of future crises, rather than just an economy resulting from an economic shock caused by a global emergency. The shift towards a green economy can achieve stronger economic growth while also helping to achieve global environmental goals and address the structural disparities revealed by the pandemic. In fact, the COVID-19 pandemic has generated the strongest economic shock of the twenty-first century; however, in addition to the negative elements of the pandemic, the world now has an opportunity to rethink how the economy of the future will work. This represents an important opportunity to raise the level of interest in the green economy, which can save the world from unexpected shocks and health crises that may occur as a result of climate risks.

The core principles of a green economy encompass low-carbon development, resource efficiency, and social inclusion. This economic model values natural capital as a key economic asset and aims to drastically reduce waste while minimizing the resources and energy required for consumption. An inclusive green economy emphasizes reducing, reusing, and recycling goods. Implementing green economic policies and legislation is crucial for transitioning to economic sectors that contribute to a resilient economy. Such policies might include eliminating fossil fuel subsidies, enforcing the "polluter pays" principle, supporting green jobs, and integrating green criteria into financial recovery policies (UN, 2020, p.02).

The United Nations Environment Programme has advocated for the concept of "green stimulus packages" and identified specific areas where public investment can begin on a large scale with a "green economy". This has inspired many governments to implement significant "green stimulus packages" as part of economic recovery efforts. The three main areas of action in the green economy are (بن يزة وسغيري، 2019، ص. 20) :

- Advocating for a macroeconomic approach to sustainable economic growth through regional, sub-regional, and national forums.

- Demonstrating the green economy approach with a central focus on accessing green finance, technology, and investments.
- Supporting countries in terms of development and mainstreaming macroeconomic policies to support the transition to a green economy.

Economic relief measures in response to COVID-19 offer nations a chance to bolster the green economy. Yet, the majority of these initiatives lack a foundation in sustainable practices. Advancing agendas for a green economy necessitates a synergy of environmental and fiscal strategies. This proves difficult to navigate currently, given the indefinite timeline of the pandemic, which has escalated into a prolonged crisis impacting health, ecology, and the economy.

Environmental conservation pathways in the post-lockdown world involve a gradual shift towards eco-friendly approaches, such as investing in renewable energy. This investment not only provides more job opportunities in the short and long term, thereby boosting spending and accelerating recovery, but also includes recovery policies that stimulate green investments. For instance, researching technologies that ensure energy efficiency and waste management can, in the long run, enhance healthy ecosystems and reduce environmental stress. Additionally, opening avenues for green job programs helps restore the ecological order, thus creating new ecological systems characterized by resilience and sustainability.

Conclusion:

The COVID-19 pandemic is primarily one of the most severe health crises the world has known, and it quickly became the worst human, economic, and environmental crisis that increases national and global security threats. The health emergency has imposed the necessity of adopting proactive adaptive policies with potential crises that are exacerbated by the change and degradation of the ecological system. The COVID-19 crisis has provided a unique opportunity to move towards a greener, more sustainable, and equitable society to avoid the destruction of ecosystems by establishing new environmental standards characterized by resilience and sustainability.

Early attempts to respond to and contain the crisis led to a focus on health security, which made the impacts on other dimensions unexpected. This created an environmental gap that quickly turned into a real environmental crisis, not to mention previous crises that continue to pose a threat, such as climate change and loss of biodiversity. In light of the mistaken belief that the temporary decrease in emissions during the pandemic allows us to delay environmental conservation measures, a well-designed green recovery plan can realistically deliver dual benefits, supporting global economic recovery from the COVID-19 crisis while also promoting environmental sustainability. This approach not only fosters economic growth but also ensures long-term ecological resilience.

Here is a professional translation of the points you provided:

- The impact of the coronavirus on health has led the international community to focus on responding to this dimension and postpone environmental strategies that could protect against climate threats resulting from the pandemic's impact.
- The re-emergence of new green deals was a result of the necessity imposed by the health crisis's repercussions on the environment. Moving towards green approaches can reshape new standards for protecting ecological systems.
- Green investments are the only component of long-term sustainable environmental development strategies.
- The unknown timeframe of the pandemic has affected international policies towards the environment, as priorities cannot currently be changed before the actual end of the health emergency.
- The economic arguments for green investments are sufficient to move towards embodying green deals in their various contents. However, the problem posed in the post-lockdown world is directing budgets towards other urgent requirements primarily related to increasing spending on healthcare aspects.

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