

# THE POST-PANDEMIC IMPACT ON NATURE AND THE NEED FOR SUSTAINABLE RECOVERY STRATEGIES

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**Abstract:** The COVID-19 pandemic threatened public health, with countries around the world taking stringent containment measures to flatten the infection curve. More positively, however, the pandemic led to reductions in water and air pollution. Since transportation and industrial activities reduced dramatically during the pandemic, emissions of greenhouse gases lowered significantly. Air quality in major cities improved, while the natural environment began to slowly recover. However, this trend does not look like it will last long: plastic pollution is reported to have increased due to disposable masks and gloves being left in streets, drains, rivers, beaches, and the ocean. Littered surgical masks and medical gloves are clogging major waterways while, at the same time, marine mammals such as seabirds and turtles are at risk of severe injury and even death if they mistake the bright colours of latex gloves and masks for food. Additionally, lockdowns around the world have had almost no effect on climate change according to the most recent studies, having had little impact on overall atmospheric CO<sub>2</sub> concentrations. In the meantime, the 'rebound effect' is expected to have a significant impact in the months after lockdowns are lifted, especially as governments invest in rapid economic recovery. While we fight the pandemic and its aftereffects, however, we should also consider environmental care. Islam teaches us several principles related to environmental protection, including guardianship of the earth, preservation of the environment, and mercy towards animals, including recognition that other creatures contribute to human welfare. These are reminders from God to maintain ecological sustainability through the concept of balance. This lesson from Islamic teachings is necessary, especially during this recovery period. This article will end with a list of policy recommendations suggesting how we might properly reset, restore, and recover during the post-lockdown period without harming the environment.

**Keywords:** COVID-19, post-pandemic impact, environmental recovery, sustainable

The novel coronavirus (COVID-19) is an airborne infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Based on rigorous research, researchers unanimously agree that the virus has zoonotic origins.<sup>1,2</sup> Since it originated from animals, it must first have been transmitted amongst them in the wild, only for it to spread from animal to humans, followed by human-to-human transmission in Wuhan during 2019. The infection started among a certain group of people with unusual diets involving the consumption of exotic wildlife, including many endangered species (bats, pangolin, snakes)

that are believed to be carriers.<sup>3</sup> Those who were infected commonly showed mild symptoms (fever, cough, fatigue, shortness of breath, and loss of smell and taste), while some developed acute respiratory distress syndrome (ARDS) with a high chance of fatality when certain underlying health conditions were present.

COVID-19 first hit Malaysia in January 2020, when introduced by tourists. Although quickly brought under control, a second wave hit involving variant strains introduced mainly by Malaysians returning as former permanent residents of Japan, South Korea, and Indonesia. By March 2020, infection and mortality rates began to rise, prompting the government to enforce preventive measures to fight the spread. These measures included phase-by-phase movement control orders (MCOs) and lockdowns. Citizens were required to shelter at home, practice physical distancing, wear suitable masks, wash and sanitise their hands regularly, and monitor their body temperatures.<sup>4</sup>

The COVID-19 pandemic was not only a threat to public health; it also caused a major economic decline when countries across the world began taking stringent containment measures to flatten infection curves. Affected sectors included accommodation and food services, art, entertainment and creation, education, transportation and warehousing, wholesale trade, mining, oil, and gas.<sup>5</sup> At the same time, the pandemic caused a worldwide stock market crash, recorded to be the largest one-week decline since the Great Recession of 2008. The pandemic also led to the cancellation or postponement of global sporting, technology, and fashion events,<sup>6</sup> further impacting the world economy. According to the World Bank, the COVID19 recession has seen the fastest and steepest downgrades in growth projections since 1990.<sup>7</sup>

In Malaysia, MCOs restricted production and consumption activities, weakening domestic and external demand, while also constraining supply. In addition, the country's tourist industry declined due to the closure of the international border and restricted interstate travel. Those most affected by these developments included low-income individuals and small businesses. Some businesses ceased operation permanently, resulting in layoffs that led to a rise in unemployment. The Malaysian government has had to provide several stages of fiscal stimulus worth hundreds of billions of ringgit to reduce these financial difficulties.<sup>8</sup> The pandemic caused Malaysia's GDP to plunge 17.1 per cent in the second quarter of 2020 from a 0.7 per cent growth the previous quarter.<sup>9</sup>

Although lockdowns around the world have severely affected the global economy, they have also resulted in a reduction in water and air pollution, benefitting the environment. Since transportation and industrial activities were reduced dramatically during lockdown, the emission of greenhouse gases (GHG) such as carbon dioxide (CO<sub>2</sub>), nitrous oxide (NO<sub>2</sub>), and methane (CH<sub>4</sub>) also began to significantly reduce, down to their lowest levels since World War II,<sup>10</sup>

resulting in land surface temperature drops globally.<sup>11</sup> In just a few weeks of lockdown, NO<sub>2</sub> levels in some cities across China, the UK, and US, reduced by 40, 60, and 30 per cent, respectively.<sup>12</sup> As a result, air quality improved and the natural environment began to recover slowly, creating what, for some, seemed to be a pause in the climate crisis.

Certainly, some animals were observed getting their natural lives back. Pandas, for instance, suddenly had space to breed naturally after a decade of visitors watching their daily activities and interrupting that process. Similar behaviour was also observed among turtles, who began returning to certain places to lay their eggs. The number of nests and eggs they have produced has increased to unusual levels. At the same time, the number of surviving hatchlings has also increased since many locals, tourists, and even wildlife smugglers have been absent. There have also been scenes of wild animals enjoying their freedom during lockdown, with dolphins, for example, swimming and jumping in the calm waters of the Bosphorus Strait when water traffic dropped and anglers were not around. The environment was certainly enjoying a recovery period at this moment.

However, this situation may not last very long. While there have been reductions in air and water pollution, plastic pollution has reportedly increased due to the littering of disposable masks and gloves in the streets and drains of cities. An awareness that it is necessary to wear masks does not translate into an awareness of how to dispose of them properly. While used masks worn by health frontliners are treated as medical waste, since they might contain harmful pathogens, those of the public are not even though they may still be harmful. These used masks, disposed of haphazardly, have even been found in the natural environment, in rivers, on beaches, and in the ocean. In Europe, littered surgical masks and medical gloves have clogged the continent's major waterways, with some having already made it into the ocean.<sup>13</sup> Marine mammals, such as seabirds and turtles, are at risk of severe injury and death if they mistake the bright colours of these latex gloves and masks for food.<sup>14</sup> Moreover, since disposable protective gear is made of polypropylene, it will disintegrate quickly into microplastics, which are almost impossible to get rid of. Microplastics, or any piece of plastic less than 5 millimetres in size, are ingested by marine life and will eventually enter the human body through seafood consumption. Once this happens, they may disrupt iron absorption and stress the liver.

Overall, lockdown has also had an almost negligible effect on the climate crisis according to recent studies.<sup>15</sup> Projections of CO<sub>2</sub> emissions in 2020 by the International Energy Agency and others have estimated a drop of only 7 to 8 per cent compared to 2019, equating to the release of around 47 billion tons of carbon instead of 51 billion, reducing emissions to roughly what they were in 2011.<sup>16</sup> However, achieving this reduction in CO<sub>2</sub> emissions has cost the lives of more

than 600,000 people, while tens of millions are out of work.<sup>17</sup> The cost of averting a single ton of carbon is around \$100 according to economists, but in the case of the carbon reduction driven by COVID-19 in the European Union, the economic cost has between \$3,200 and \$5,400 per ton, as reported by the Rhodium Group.<sup>18</sup> This shows how difficult and costly it is to reduce emissions via the behavioural changes of individuals.

Another reason the lockdown has had a negligible effect on the climate crisis is that overall CO<sub>2</sub> concentrations in the atmosphere have barely changed.<sup>19</sup> Although the process of building up CO<sub>2</sub> concentrations may have reduced, existing concentrations remain high. Moreover, even though build-up rates of CO<sub>2</sub> concentration reduced during lockdown, they will likely return to their previous levels afterwards. This ‘rebound effect’ is likely to be very significant in the months after lockdowns are lifted based on the experience of the Global Financial Crisis (GFC) of 2008 to 2009; when governments began promoting rapid economic recovery in 2010, global CO<sub>2</sub> emission quickly rebounded.<sup>20</sup>

Certainly, the post-lockdown period will witness many factories push to make up for lost time. The need for economic boosters is already evident from the increase in approved permits for new coal-fired power plants, infrastructure that will be used for years and that can only increase GHG emissions.<sup>21</sup> In this case, how G20 countries behave will be a central focus as they are considered to be the world’s major economic leaders, carrying 85 per cent of global economic output and 75 per cent of international trade. As of September 2020, the G20 has pledged a post-COVID stimulus of \$207 billion for fossil fuels, compared to only \$137 billion for clean energy.<sup>22</sup>

Among the G20, the United States has pledged \$3 trillion in fiscal support that does not directly consider sustainability. The Trump administration provided support for the fossil fuel industry, while rolling back the country’s environmental protections. In contrast, those countries that have taken the greenest measures include France, the UK, and Germany. They have allocated 30 per cent of their \$891 billion stimulus plans and \$1.3 trillion of future budgets for climate-friendly investments. Most other G20 countries fall somewhere in between these two positions. South Korea, India, and China, for instance, support coal in their economic plans, but while also making green investments.

Green economic measures must also be implemented by developing countries (LDCs), since the pandemic has impacted them disproportionately. A focus on energy usage should, for example, be a priority in Southeast Asia. In Malaysia, recent decades have seen the manufacturing industry and services sectors expand, helping to transform the region into an economic powerhouse. As a result, energy demand has increased: growth in electricity demand across Southeast Asia is amongst the highest in the world, increasing an average of 6 per cent per year.<sup>23</sup>

Even so, there are still 45 million people across the region who do not have access to electricity – although universal access is expected by 2030, increasing demand still further. Unfortunately, the region relies heavily on fossil fuels to meet demand, a situation not expected to change after the pandemic.

Currently, the main energy sources in Southeast Asia are coal and oil, which are primarily used in power generation and energy mix measures, respectively. This creates pollution, risking public health and driving up carbon emissions. In recent years greener measures have been taken into consideration with the allocation of expenditure for solar power. The entry of solar energy into the energy mix could slow dependency on fossil fuels, but current take-up rates are too small. These energy mix efforts are insufficient, especially given Southeast Asia has easy access to sunlight. Malaysia is only the third country in ASEAN to build an operational solar PV power plant, after Thailand and the Philippines.<sup>24</sup> This is despite several large Malaysian companies manufacturing quality solar panels, most of which are sent overseas for use elsewhere. Greater investment is therefore needed for the construction of clean energy facilities, including the scaling up of solar farms, especially in the post-pandemic period.

Increases in GHG are also a product of increased private vehicle usage post-pandemic as people avoid public transport in order to maintain a physical distance from others.<sup>25</sup> As a result, GHG emission now exceed pre-pandemic levels.<sup>26</sup> This surge in GHG emissions is alarming climate experts. In Brazil, illegal loggers also began accelerating the destruction of the Amazon rainforest during the pandemic due to a loophole in policy designed to mitigate poverty.<sup>27</sup> It is clear that decreasing GHG over the short term is not a sustainable way of recovering the environment.<sup>28</sup> The reductions in GHG driven by the pandemic were obtained through unsustainable methods. What were seen as ‘good effects’ were obtained indirectly, unintentional, and temporarily. Ultimately, there has been almost no positive environmental impact from the coronavirus pandemic as the threats posed by humans continue.<sup>29</sup>

Therefore, we need to consider environmental care during this pandemic recovery period. The environment, including its wildlife, needs our attention. In Islam, humans have guardianship (*khilafah*) of the earth. As mentioned in Qur’an, “*And it is He who has made you successors upon the earth and has raised some of you above others in degrees [of rank] that He may try you through what He has given you. Indeed, your Lord is swift in penalty; but indeed, He is Forgiving and Merciful*” (6:165). This means that humans are not only capable of exercising power over other creatures but must act responsibly towards them. In a hadith, the Prophet Muhammad said, “*A good deed done to an animal is as meritorious as a good deed done to a human being, while an act of cruelty to an animal is as bad as an act of cruelty to a human being*” (Mishkat al-Masabih;

Book 6; Chapter 7, 8:178).

Animals are as important as humans because they are also alive, exist in communities, and will receive similar returns in the Hereafter for their deeds. As the Qur'an says, "*And there is no creature on [or within] the earth or bird that flies with its wings except [that they are] communities like you. We have not neglected in the Register a thing. Then unto their Lord they will be gathered*" (6:38). They also pray, but in their own way: "*Do you not see that Allah is exalted by whoever is within the heavens and on the earth, and by the birds with wings spread? Each of them has known his means of prayer and exalting*" (24:41). Islam recognises animals as creatures with rights that must be protected. There was an instance where the Prophet Muhammad prohibited the people from dragging, mutilating, and branding animals, saying "*God curse the one who branded it*" (narrated by Jabir bin Abdullah. Muslim, Vol.3, Hadith No. 2116).

In fact, Islam has made the care of nature (the environment and animals) an obligation: "*And do no mischief on the earth after it has been set in order, that will be best for you, if ye have Faith*" (7:85). Humans must preserve the environment and maintain its natural balance: "*And the Firmament has He raised high, and He has set up the Balance (of Justice), in order that ye may not transgress (due) balance*" (55:7-8). At the same time, humans must not forget that they need animals: "*It is God who provided for you all manner of livestock, that you may ride on some of them and from some you may derive your food. And other uses in them for you to satisfy your heart's desires*" (40:79-80). Indeed, animals not only provide milk, meat, and transportation, but also medicinal cures: as the Prophet Muhammad said, "*Honey is a remedy for every illness and the Qur'an is a remedy for all illness of the mind, therefore I recommend to you both remedies, the Qur'an and honey*" (Sahih Bukhari).

Even though humans are intelligent creatures, they learn and are inspired by animals. However, instead of taking care of the environment, humans often do the opposite: "*Corruption has appeared throughout the land and sea by [reason of] what the hands of people have earned so He may let them taste part of [the consequence of] what they have done that perhaps they will return [to righteousness]*" (30:41). This verse refers to irresponsible groups of people who corrupt the natural environment, and who are elsewhere reminded to understand God's greatest creation (ecological sustainability): "*Do you not see that Allah sends down rain from the sky and makes it flow as springs [and rivers] in the earth; then He produces thereby crops of varying colours; then they dry and you see them turned yellow; then He makes them [scattered] debris. Indeed in that is a reminder for those of understanding*" (39:21).

Therefore, as humans we must be responsible. As Muslims, it is our obligation to protect nature and avoid corruption on the earth. Hence, we must take reminders

from the Qur'an such as this seriously: *“And do good as Allah has been good to you. And do not seek to cause corruption in the earth. Allah does not love the corrupters”* (28:77). As we recovery from the pandemic, we must take good care of the environment as an essential economic recovery measure. Unfortunately, most conventional economic activities are achieved at the expense of the environment. This, especially after lockdown, is not sustainable and should not be repeated. Green economic recovery strategies are necessary to conserve the environment while regaining what has been lost during the pandemic. Sustainable economic recovery strategies can overcome the rebound effect.<sup>30</sup>

First and foremost, we facing these problems we should identify root causes so that reset, restore, and recovery measures can materialise. In the case of the environmental impact caused by the current pandemic, we have already identified the littering of used masks and gloves as a contributing factor to increased plastic pollution. Such pollution has created various problems, ranging from environmental to economic to health issues. At the individual level, a reset measure can be initiated by inculcating awareness of how to dispose of used items properly.

Efforts to change individual behaviours are always a continuous challenge. Even though a series of awareness campaigns aimed at keeping the environment clean have emerged worldwide over the last decade, including the 3Rs (reduce, reuse, and recycle) campaign, little progress has been made. While the effectiveness of such campaigns vary from one region to another, as well as from country to country, few have achieved effective implementation anywhere. Indeed, most have not achieved their expected minimum targets. Further challenges revolve around consistency; while patterns may change, they often become less effective over time. This highlights the importance of addressing pre-pandemic issues in the first place, to ensure reset, restore, and recovery measures are on the right track. Previous and current efforts to inculcate and instil awareness are good and highly commendable. However, their effectiveness is limited to certain groups, places, periods of time, and circumstances. Therefore, we must seek post-pandemic solutions capable of solving current issues as well as similar, pre-pandemic issues that remain contentious. Further, these solutions must also be sustainable so that they solve future problems. It is suggested that these solutions need to be found at three distinct societal levels, as follows.

**The individual level.** Since resetting measures must start at the individual level, it is important to recognise individual waste handling behaviours. Such behaviours can be divided into at least three groups. The first can be categorised as ‘irresponsible polluters,’ or those who constitute the main actors responsible for littering. They are those who arbitrarily litter, no matter where they are, as

well as those who sometimes dispose of waste properly, but often do not due to a lack of disposal facilities. The second group consists of ‘responsible individuals’ who dispose of used masks and gloves in the right way, whether into a recycle or other dedicated bin, or into general waste bins, provided the latter are not then littered. The last group, on the other hand, are ‘voluntary collectors.’ A projection of the second group, they consist of those who willingly do more than just manage their own waste, voluntarily collecting and disposing of the waste of others. This group is far smaller than the first two.

Such grouping is important because awareness raising campaigns must fit their target audience as defined by their behaviour. For instance, individuals in the first group must be inculcated with more awareness in order to encourage them to change their habits and become ‘responsible.’ Ideally, the world needs all people to be in the second group and managing their waste properly. It would be even better, however, if people were encouraged to be in the next group and able to voluntarily manage the waste of others. With the correct awareness campaigns, the number of those in the third group will increase steadily. Those who attain that level should be encouraged and supported, or at least valued, so that they will continue their voluntary efforts.

Awareness campaigns, however, do not always manage to change behaviour. Rather, strict measures, including fines and other punishments, will be necessary to control littering. However, the enforcement of such measures can be ineffective and troublesome. Irresponsible individuals might see low fines as a cheap consequence of their wrongdoings and, sadly, continue to lack awareness. Some individual will also escape accountability by remaining untraceable. A more effective method would involve returning to the root cause of the problem: as pollution originates with littered masks, gloves, and other protective gear designed as disposable items for single use only, a shift towards reusable products may be necessary. A single, quality washable mask used for a month could eliminate reliance on a box of disposable masks, reducing the chances of littering and thus saving the environment.

**The manufacturing level.** A transition from single-use to reusable products will rely not only on awareness raising efforts by the government and NGOs, but on manufacturers producing good, reusable masks and gloves. This requires manufacturers to ‘rethink’ their products. This approach will go beyond the previous 3Rs outlined for consumers, requiring manufacturers to study and plan for reusable products that will not harm the environment. The new innovative products should be eco-friendly, antibacterial, and biodegradable. Crucially for businesses, they must also be economical so that consumers across all financial backgrounds can afford them. It is, of course, a challenge to provide quality



products at affordable prices, but it is the responsibility of manufacturers to consider this option for the sake of the environment.

Expanding the 3Rs to include ‘rethink’ would be a valuable step. Similarly, other elements could be added, such as refuse, repurpose, and rot, thus turning the 3Rs into 7Rs (rethink, refuse, reduce, repurpose, reuse, recycle and rot). To elaborate, ‘reduce’ means using fewer resources, including water and energy. ‘Reuse’ can be applied to single use items, transforming them into items to be worn as long as it is safe to do so. ‘Recycle’ allows materials to be reused under certain processes, reducing the use of new materials. Turning to the additional Rs, ‘refuse’ could simply mean the avoidance of extravagant or unnecessary purchases, while ‘repurpose’ would indicate reusing something, but for a different purpose. ‘Rot,’ on the other hand, emphasises those things that can be returned to the soil instead of being dumped into landfill, where they can generate GHG emissions. To these 7Rs, we could add other terms, provided they also support environmental sustainability. For example, we could add ‘repair,’ ‘re-gift,’ and ‘recovery.’

While most of these practices place the onus on consumers to manage their waste, there must also be a set of practices that manufacturers follow to manage waste properly. In fact, both individual consumers and manufacturers must work together to ensure waste is well managed. For manufacturers involved in production, there are another 7Rs for them to consider. Also known as the ‘circular economy,’ these include ‘rethink,’ ‘reduce,’ ‘repair,’ ‘reuse,’ ‘refurbish,’ ‘recycle,’ and ‘recover.’ This model keeps materials, components, and products at their highest utility and value at all times. The circular economy runs opposite to traditional business models, which have linear economic practices that normally begin with resource utilisation and end with waste. Conventional economic systems that practice this ‘take-make-waste’ philosophy drain natural resources for the making of unsustainable products. The circular economy avoids the unsustainable use of resources, allowing the regeneration of natural systems.

To elaborate on this 7R system, ‘rethink’ demands manufacturers be mindful of resource usage and waste production. Business models should address the issue of resources depletion while also avoiding waste. An alternative might be to adapt to a sharing economy that operates with less resources compared to conventional models, which promote single ownership. Second, ‘reduce’ demands manufacturers apply lean design principles and extend product life spans. Third, ‘repair’ allows manufacturers (and consumers) to keep products for much longer. This not only saves money, but also the environment. Fourth, ‘reuse’ means the transferring of a used product in good condition from one user to another, for example through the second-hand marketplace. This can benefit manufacturers and help maintain the quality of their equipment, while consumers get affordable,

well-maintained used products and the environment receives minimum waste.

Next, 'refurbish' will allow the transformation of used products into new ones with new designs or performance capabilities. It can mean upcycling old products to give them a new lease of life. 'Recycle' refers to when a product is beyond repair and/or refurbishment. In this case, the product must be disassembled and then recycled. While this may also seem like 'recover,' this final term actually means using non-recycled parts that cannot be repaired, refurbished, or recycled for energy generation through waste-to-energy processes like combustion or gasification. The energy so generated can then be directed back into industry.

From all the above, it becomes clear that the circular economy will produce no wastage. In fact, under this system, existing waste in landfills could be reused for energy conversion. The circular economy will bring multiple benefits to the environment, creating jobs through its recovery processes and reducing the use of resources by 'cascading materials' from existing products to new ones.<sup>31</sup> The circular economy will only whating theFs, willos ,

**The government level.** Since a circular economy is a promising alternative economic model post-pandemic, further action is needed to achieve it. This action must be backed by the government across all sectors. So far, only 9 per cent of the world's economy is circular; to create a more sustainable economy for the good of the environment, the government should provide stimulus packages to increase this percentage. Moreover, adapting to a circular approach will provide a solution to post-pandemic unemployment by creating new, environmentally friendly jobs.

First, the government could focus on the built environment and aim to renovate and upgrade existing buildings, improving their efficiency and providing new infrastructure made from used materials. Second, the improvement of infrastructure for transportation would promote multimodal mobility.<sup>32</sup> The automotive industry could work hand-in-hand with the government here, building infrastructure for refurbishment, remanufacturing, and repair. Third, the government may encourage and support innovative reuse business models for plastic packaging. Financial assistance from the government could also be channelled into collection, sorting, and recycling infrastructures. Fourth, the government could support business owners in the fashion industry to help them collect, sort, and recycle clothing. This industry would also be encouraged to consider rental and resale business models for clothing.

Finally, the government could also invest in food production by supporting farmers with equipment and tools that enable them to shift to regenerative agriculture.<sup>33</sup> Financial support could also be channelled to infrastructure for the collection and redistribution of food surplus and agricultural by-products.

Investments supporting these measures will drive a circular business environment that simultaneously addresses environmental and unemployment issues post-pandemic. It is clear that financial support is crucial to ensure recovery strategies materialise. Therefore, the government must prioritise green finance as well as facilitate any form of financial assistance that supports sustainability. As a start, the government may limit the financing of ‘brown’ economic activities, such as coal-fired power plants, in favour of renewable energy facilities. The government could start to consider reducing fuel subsidies phase-by-phase before removing them entirely in the future. Since the world after the pandemic needs a sustainable recovery solution, transitioning from fossil fuels to clean energy is recommended.

To boost green measures through energy transition, the 3Ds must be considered: ‘decarbonisation,’ ‘decentralisation,’ and ‘digitisation.’ This strategy is the key to keeping energy production away from fossil fuels, thereby reducing carbon emissions and avoiding a severe rebound effect post-pandemic.<sup>34</sup> First, it will involve ‘decarbonising’ electricity – or generating electrical power for industrial, commercial, and residential use without carbon emissions, using only renewable and non-polluting sources. Such clean energy can be tapped from sunlight, wind, geothermal, and hydro. Transitioning from one form of power to another will also create jobs, limit rising global temperatures, and keep the international Paris Agreement on track. Second, the ‘decentralisation’ of energy will focus on smaller, more dispersed energy distribution. It will be complementary to the centralised energy system, ensuring every person has access to electricity, no matter where they are. And, third, ‘digitalisation’ will address the challenges of rapid change in the energy sector. It will help manage large amounts of data for analysing, optimising, and maintaining the performance of energy systems over the long term.<sup>35</sup>

In conclusion, the above shifts are an inclusive and responsive way to recover the economy and achieve environmental sustainability. Furthermore, it is worth noting that investment in the environment is always beneficial to humanity. The pandemic has taught us that, if we keep harming the environment, the consequences of doing so will come back to haunt us. Therefore, we must adopt nature-based solutions to live in harmony with the environment. We can pursue advanced technology and modern lifestyles, but not at the expense of nature. However, the same old mistake of lifting people out of poverty at the expense of the environment keeps on happening. As mentioned in a Brundtland report, those who are poor and hungry will often destroy their immediate environment to survive.<sup>36</sup> We must change our habits and ways of life for a better future. A strategy to reset, restore, and recovery after the pandemic can be summarised

in the following recommendations:

1. Natural resources should not only be consumed, but nurtured, protected, and managed properly. Each of us must ‘rethink’ our attitude towards nature and become more aware of our place within it. Harming nature means harming ourselves.
2. The public are encouraged to keep environmentally friendly practices, including the 7Rs. These practices promote environmental protection and address environmental issues at the individual level.
3. Enforcement must be strict and efficient so that irresponsible polluters will be punished. Strict enforcement will act as a reminder to others not to pollute the environment.
4. Manufacturers are encouraged to produce safe, reusable products that are eco-friendly, antibacterial, and biodegradable. Most importantly, manufacturers must make these products economical so consumers across all financial backgrounds can afford them.
5. Policymakers must encourage the implementation of a circular economy that saves and fully utilises natural resources without letting anything go to waste. This can then evolve into eco-design so that materials are used efficiently.
6. The government should limit the financing of brown economic activities and reduce fuel subsidies, while increasing green financing to boost the economy post-pandemic. This will support sustainability and create new jobs.

## Notes

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