Berries in Baskets versus Apples in Crates: Arguing for Ecocentrism in a Post-COVID World*

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Abstract

The global outbreak of COVID-19 has raised questions about human relationships with nature vis-à-vis development models that are largely followed worldwide. Conservation biologist Raymond F. Dasmann introduced the concept of "ecosystem people" to describe predominantly rural communities who largely depend on the resources available in one or a few ecosystems around them. These societies are also characterized by their close relationships with nature and their ecocentric worldviews. However, the world today is dominated by "biosphere people" who populate the urban areas and typically use resources extracted from all over the world. This biosphere model of existence has also given rise to a "biosphere culture" with consumption and development

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as its cornerstones, protected by spectacular technological innovations. COVID-19 has made cracks appear in both the development model and the technological support systems. This has allowed us to realize that our technological shield has been unable to protect us against this virus and leaves us uncertain that similar plagues would not surprise us in the future. The COVID crisis is raising fresh questions about the efficacy of metrics like the GDP in measuring our economy vis-à-vis overall wellbeing. This paper argues that the experiences gained from the COVID-19 crisis should lead us to evolve a new model of development that pays due attention to ecosystem-based approaches. Such a model will move away from the "economy of violence" to an "economy of permanence" by trying to couple local productivity with more inclusive biodiversity conservation. It will also be enriched by the vast biospheric repository of knowledge in all conceivable subject fields. Such a model will represent a paradigm shift by having its philosophical moorings in ecocentric rather than anthropocentric views of nature.

Keywords: *biosphere people, ecocentrism, ecosystem people, pandemic, technosphere*

Introduction

Besides its widespread and devastating impact on human health, the economy, and societal interactions, COVID-19, the disease caused by SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2), has also raised some questions about human relationships with nature

vis-à-vis the development models that are largely followed worldwide. Many of our experiences during the COVID-19 pandemic induce us to speculate over the possibilities and prospects of a paradigm shift in our relations with nature in the post-COVID world.

In this context, "berries in baskets" signify locally available resources that need to be harvested with prudence and discretion to support sustainable living. There is also a need for devising ways and means for the regeneration and augmentation of these local resources that may include plants, animals, water, minerals and so on. Instead of regarding them as mere resources from a viewpoint of purely anthropocentric instrumental value, an ecocentric reorientation to recognize intrinsic values in living entities is also necessary. Opposed to these local resources or entities are the "apples in crates" that represent resources derived from globalized supply chains, which are generated by mass production technologies and transported to widespread areas across the world. The dominantly followed development model lays overt emphasis on mass production and export / import to or from distant areas, while aspects like local food security and livelihood safety nets receive scant attention. This imbalance has also created a disconnect between the local and global, which in turn has implications in both in-COVID and post-COVID scenarios.

COVID-19, Ecosystem People and Biosphere People

In order to examine the development of human societies with respect to the mode and extent of resource use, I revisit Raymond F. Dasmann, a well-known conservation biologist, who classified human communities into ecosystem people (EP) and biosphere people (BP).[1] The EP comprises groups of people who largely depend on the resources available in the ecosystem in which they live or in a few nearby ones. For example, indigenous communities all over the world and rural communities in developing countries could be characterized as living a largely ecosystem existence with their food and most other requirements being met from nearby areas.

Because of this proximity to and dependence on their immediate environment, the EP develop close social, cultural, religious, and other conceivable bonds with nature. These bonds help them to evolve mechanisms that keep the ecosystems intact, biodiverse, and functional. Such mechanisms include maintenance of sacred groves for protecting plants and animals, observing taboos on extracting plant resources and killing animals, and a host of other rituals and practices. Many of these practices, which also embody ecocentric worldviews that recognize intrinsic values in nature, flourish in these societies. Dasmann also

[1] Raymond F. Dasmann, "Towards a Biosphere Consciousness," in *The Ends of the Earth: Perspective on Modern Environmental History*, ed. Donald Worster (Cambridge: Cambridge University Press, 1988), 177–188.

pointed out that despite being confined to and extracting resources from a relatively small area, EP do not necessarily live impoverished lives and have unlimited access to sufficient food and other necessities. Of course, this does not imply that a single ecosystem or a small cluster of ecosystems can meet the ever-burgeoning levels of consumption characteristic of a globalized existence.

The proportion of EPs today are being reduced in different parts of the world. Urbanization and globalization have led to increasing numbers of people living in cities. While an estimated 7 percent and 16 percent of the world population lived in urban areas in 1800 and 1900, respectively, this has increased to about 47 percent in 2000 and over 55 percent in 2019. The world is being increasingly dominated by the BP who use resources extracted from all over the world and are often transported hundreds or thousands of kilometres to cater to their consumers. Even many rural communities of the developed countries essentially lead a "biospheric" existence in terms of their resource use pattern. Powered by technological innovations, the world community has moved steadily from a predominance of EP societies to that of BP societies. This biosphere model of existence has also given rise to a "biosphere culture" with consumption and development as its cornerstones, safely nested in the protective bubble of the "technosphere" equipped with its powerful and sophisticated tools in almost all fields of human activity.

The Impacts of COVID-19

One of the many disturbing features of COVID-19 is that it has made cracks appear in both the developmental and technological edifices on which the biosphere societies depend. It is in this context that Dasmann's differentiation of human societies into EP and BP assumes significance. For example, in many countries like India (and to a varying extent in several south and east Asian countries and elsewhere), a large part of the labor force that sustains the development industry are "foreigners" in the place where they work. In fact, most of them are EPs who had to give up their ecosystem-based existence in search of employment. Some of the rural populace work in their home state's cities. Some others work in states other than their home state. Others work outside their own country. COVID-19 and the resultant lockdown have brought unemployment to many of these laborers, revealing the weakness of our developmental edifice.

In India, large sections of these jobless people have now come back to their native villages, which the majority had left because of both the poor access to and the lack of resources and opportunities. Of course, some left because they were looking for better and more paying opportunities in the cities and metropolises. These EP are turned into environmental refugees (ER) who have moved into the outer perimeter of the biosphere society, which they support with their labor. COVID-19 has set off a reverse migration of these ER to their native places, where they must now seek their livelihoods, at least for some time as shown in fig. 1.

Figure 1 suggests that there are some "core" EP who are securely ensconced in their place. On the other hand, a large number of people are struggling to secure a living because of ecosystem degradation, resource depletion, and other compulsions, eventually leading to an exodus to the BP areas. The BP also have their core members and mostly white-collar "aspirants" who are trying to make a foothold in the core. Their livelihoods are not so much at stake, barring some "pay-cuts" in some organizations. It is the ER in the outer layer who are bearing the brunt of economic slowdown caused by COVID-19. COVID-19 has therefore brought to fore the "disconnect" that has been existing between the ER who are essentially displaced EP, constituting the support base of the BP and the BP themselves. It is necessary to eliminate or reduce this disconnect to have a more resilient society not only in the face of COVID-19 but also other probable future pandemics or environmental crises such as that engendered by climate change.

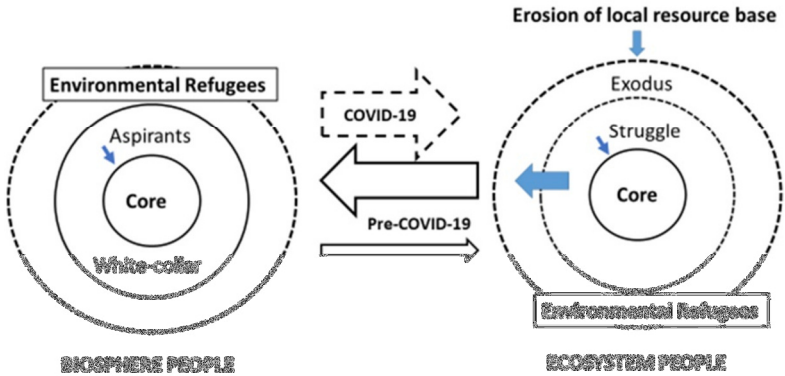

Figure 1. Biosphere People, Ecosystem People, and Environmental Refugees, and their interactions and migrations.

In the context of the technological edifice, vulnerabilities in our healthcare system have been exposed despite the spectacular progress in medical science. Our technological shield in terms of vaccines or drugs has been unable to protect us against an affliction that has pounced on us from another species. Our healthcare system has been overwhelmed in many places, including those in developed countries like the UK and the US, by the sheer number of COVID-19-induced morbidities. Even after we emerge from the maws of COVID-19, we would be unable to assert with any certainty that similar plagues would not penetrate our medical defenses in the future.

Ignoring Pre-Existing Knowledge

At this point, a question arises as to whether COVID-19 really should have taken us by surprise. Theoretical predictions about zoonotic viruses and other microbes were coming from scientists since long ago. Charles S. Elton, one of the founders of the subject of ecology, wrote:

> It is not just nuclear bombs and wars that threaten us, . . . there are other sorts of explosions, . . . ecological explosions. An ecological explosion means the enormous increase in numbers of some kind of living organism—it may be an infectious virus like influenza, or a bacterium like bubonic plague, or a fungus. . . . I use the word 'explosion' deliberately, because it means the bursting out

> from control of forces that were previously held in restraint by other forces.[2]

Joshua Lederberg in a 1988 article in the *Journal of the American Medical Association* predicted: "The opening of wild lands to human occupation also has exposed people to unaccustomed animal viruses, to zoonoses."[3] In 1995, Joel E. Cohen concluded: "The wild beasts of this century and the next are microbial, not carnivorous.[4]

Besides the theoretical predictions, we already knew of at least four such pandemics that had occurred during the last 100 years or so. Besides the infamous 1918 "Spanish flu," there were three more pandemics in 1957, 1968, and a more recent one in 2009. "The 1918 influenza pandemic was the most severe pandemic in recent history. It was caused by an H1N1 virus with genes of avian origin."[5] The virus spread worldwide during 1918–1919 infecting about "500 million people or one-third of the world's population. The number of deaths was estimated to be at least 50 million worldwide

[2] Charles S. Elton, *The Ecology of Invasions by Animals and Plants* (Boston, MA: Springer, 1958), 15.

[3] Joshua Lederberg, PhD, "Medical Science, Infectious Disease, and the Unity of Humankind," *Journal of the American Medical Association* 260, no. 5 (August 5, 1988), 685.

[4] Joel E. Cohen, "Population Growth and Earth's Human Carrying Capacity," *Science* 269, no. 5222 (July 21, 1995), 341.

[5] Center for Disease Control and Prevention (CDC), "History of 1918 Flu Pandemic," page last reviewed March 21, 2018, https://www.cdc.gov/flu/pandemic-resources/1918-commemoration/1918-pandemic-history.htm.

with about 675,000 occurring in the United States alone."[6] There was neither a vaccine to protect people from acquiring it nor any antibiotic to treat the secondary bacterial infections that often accompany bouts of influenza. The only interventions available were "non-pharmaceutical" ones such as isolation, quarantine, improving personal hygiene, using disinfectants, and restricting public gatherings.

The 1957 Asian Flu was caused by an H2N2 virus that was also avian in origin. It first appeared in Singapore, spread to Hong Kong, and then to coastal USA. It killed an estimated 1.1 million people worldwide, including 116,000 in the US.[7] The 1968 pandemic that was caused by an H3N2 virus of avian origin killed about 1 million people worldwide and was particularly severe on the elderly. The 2009 swine flu pandemic caused by an H1N1 virus killed over 18,449 people.[8] And then we had the 2003 "SARS-CoV" (severe acute respiratory disease) epidemic that in the words of the World Health Organization (WHO), "shook the world"[9]

[6] CDC, "1918 Pandemic (H1N1 Virus)," page last reviewed March 20, 2019, https://www.cdc.gov/flu/pandemic-resources/1918-pandemic-h1n1.html#:~:text=The%201918%20influenza%20pandemic%20was,spread%20worldwide%20during%201918%2D1919.

[7] CDC, "1957-1958 Pandemic (H2N2 Virus)," page last reviewed January 2, 2019, https://www.cdc.gov/flu/pandemic-resources/1957-1958-pandemic.html.

[8] World Health Organization, Emergencies Preparedness, Response, "Pandemic (H1N1) 2009 – Update 112," 2010, https://www.who.int/csr/don/2010_08_06/en/.

[9] Suok Kai Chew, "SARS: How a Global Epidemic was Stopped," *Bulletin of the World Health Organization* 85, no. 4 (April 2007), 324.

with the palm civet of southern China suspected to be the intermediate host.

In 2005, a bird flu epidemic was caused by an H5N1 virus, which fortunately did not spread among humans but had the potential to blow into a pandemic, and the MERS-CoV that afflicted the Middle East countries since 2012 and originated in camels. We were also threatened by the Ebola and the Nipah viruses originating from bats, pigs, and non-human primates, albeit on a smaller scale. Therefore, we were fully aware of the potentially dangerous nature of SARS-CoV-2. Generally speaking, the dangers posed by zoonotic viruses—viruses that cross over from a non-human animal species to infect humans—were already known and discussed among the scientific community.

It is therefore surprising that all our scientific knowledge including that in virology, microbiology, epidemiology, medicine, etc. did not make us sufficiently aware and alert to immediately rise in unison to swiftly adopt necessary measures when the virus first made its appearance in Wuhan, China. Someone might argue that the severity and rapidity of the spread of the virus could not be predicted at that time. But one must remember that we had the knowledge of all the past pandemics and their possible implications. Not only that, we had framed and endorsed the UN Precautionary Principle (Principle 15 of the 1992 Rio Declaration) that "states that 'where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective

measures to prevent environmental degradation'." [10] All these valuable pieces of knowledge went in vain; and timely confinement, which might have prevented or at least slowed down the spread of the virus, was not implemented.

Short-Term and Long-Term Measures

Now, there are two issues here. First, I would argue that even if we took steps to prevent the infection from spreading, these would have been short-term measures such as stopping international (and even domestic) travel, restricting public gatherings, and temporarily closing down industries and other economic activities. But our "biosphere thinking" did not allow us to take even these measures because applying brakes on "growth and development" would have shaken the roots of our biosphere existence. We took these steps only when compelled by the virus. Even in the face of high mortalities there are persistent demands from many quarters to resume unrestrained economic activities.

One of the many reasons for the hesitant and delayed response to the spread of COVID-19 in many countries was the fear of an adverse impact on economic growth. For example, the decision to shield "the oil industry" in the US, and "to protect the economy" in the UK led to delays in

[10] United Nations Global Compact, The Ten Principles of the UN Global Compact, "Principle 7: Environment," https://www.unglobalcompact.org/what-is-gc/mission/principles/principle-7.

implementing lockdowns.[11] Pisano, Sadun, and Zanini[12] have pointed out that even in late February 2020, "hand-shaking" Italian politicians tried to send the message that "the economy should not panic and stop because of the virus." It was because of these indecisions that a *Lancet* editorial[13] in March 2020 urged world leaders to "abandon their fears of the negative short-term public and economic consequences" that will result from imposing restrictions in order to be able to combat the coronavirus more effectively.

The second and more long-term issue is that even after we emerge from the maws of COVID-19, we cannot say with certainty that similar plagues would not surprise us in the future and expose us to the twin dangers of widespread morbidity and loss of life, and loss of livelihood and economic depression. It is necessary to build a "safety net" for the vast labor force losing employment (maybe temporarily) during a pandemic or similar disasters. Would the questions raised by COVID-19 influence us strongly enough to evolve a new model that lays more emphasis on

[11] Jonathan Watts, "Delay is Deadly: What Covid-19 Tells Us about Tackling the Climate Crisis," *The Guardian*, March 24, 2020, accessed May 3, 2020, https://www.theguardian.com/commentisfree/2020/mar/24/covid-19-climate-crisis-governments-coronavirus.

[12] Gary Pisano, Raffaella Sadun, and Michele Zanini. "Lessons from Italy's Response to Coronavirus," *Harvard Business Review*, March 27, 2020, accessed May 3, 2020, https://hbr.org/2020/03/lessons-from-italys-response-to-coronavirus.

[13] Manuel Silvestri, "COVID-19: Too Little, Too Late?," *The Lancet* 395, no. 10226 (March 7, 2020): 755. https://doi.org/10.1016/S0140-6736(20)30522-5, accessed May 3, 2020.

ecosystem-based development and lifestyle or shall we continue to conduct business-as-usual? A coordinated approach toward ensuring augmentation of local food and renewable energy production, the protection of habitats, and the conservation of biodiversity could be conceived as one of the effective safety nets.

A Changed Approach to Conservation and Ensuring Local Food Security

In the field of conservation, we have to move beyond the present practice of the highly prioritized conservation of threatened charismatic species in global biodiversity hotspots to more diffuse and widely spread conservation including less spectacular and charismatic species. Conservation efforts should also include species listed in the "Least Concern" (LC) and "Near-Threatened" (NT) categories of the International Union for Conservation of Nature (IUCN). The IUCN categorizes existing plant and animal species into nine categories based on their extinction risk as shown in fig. 2. Besides the "Extinct" and "Extinct in the Wild" categories, three progressively threatened categories include "Vulnerable" (VU), "Endangered" (EN), and "Critically Endangered" (CR). The "Near Threatened" (NT) and "Least Concern" (LC) include species that have no immediate threat of extinction. The "Data Deficient" (DD) category lacks information on its status and "Not Evaluated" (NE) include species that have not been assessed.

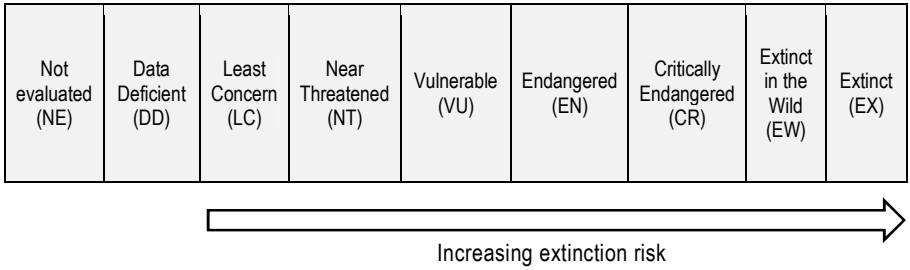

Figure 2. Different IUCN categories.

Even among the species threatened with extinction (VU/ EN/CR), conservation efforts of prominent international conservation organizations are mostly focused on charismatic species and charismatic landscapes. Examples of such prioritization are "global ecoregions" of Worldwide Fund for Nature (WWF) and the thirty-six global biodiversity hotspots of Conservation International. Charismatic species such as the tiger, panda, polar bear, sharks, and rhino also receive much more attention than other species.[14] However, many conservation experts are of the opinion that spending conservation funds to include other threatened species besides charismatic species to increase shared benefits will better ensure biodiversity conservation.[15]

[14] Monika Krause and Katherine Robinson, "Charismatic Species and Beyond: How Cultural Schemas and Organisational Routines Shape Conservation." *Conservation and Society* 15, no. 3 (2017): 313–321, DOI: 10.4103/cs.cs_16_63.

[15] Center for Excellence for Environmental Decisions, "Charismatic Endangered Species 'Can Help Save Other Wildlife'," Phys.org, May 6, 2015, https://phys.org/news/2015-05-charismatic-endangered-species-wildlife.html.

I extend the above argument to suggest that while it is justified that charismatic species of plants and animals belonging to the three highly threatened categories together with charismatic landscapes deserve more attention, care, and protection, the low-threat forms of life also ought to get greater care than what they are presently attracting. In other words, we have to extend our protection efforts outside of these "Protected Areas" and beyond "prioritized" species.

During the COVID-19 pandemic, all kinds of wildlife—both high profile species like rhinos, elephants, and penguins as well as more common forms like wolves, civets, squirrels, lizards, and countless birds—have been entering inhabited areas taking advantage of human confinement. For example, a leopard was seen in a residential colony in the city of Chandigarh, India;[16] dolphins were coming up further than usual in the Bosphorus in Turkey because of the reduced threat from anglers; wild boars were foraging for food in the deserted streets of Haifa, Israel;[17] and a sea lion was seen on a sidewalk near Buenos Aires, Argentina.[18] Paying more attention to the conservation of low priority species

[16] Rupa Gandhi, "Lockdown Impact: Animals Reclaim Space in Human Habitat," *National Herald*, April 5, 2020, https://www.nationalheraldindia.com/opinion/lockdown-impact-animals-reclaim-space-in-human-habitat.

[17] "Coronavirus: Wild Anials Enjoy Freedom of a Quieter World," *BBC News*, April 29, 2020, https://www.bbc.com/news/world-52459487.

[18] "The Urban Wild: Animals Take to the Streets Amid Lockdown – in Pictures," *The Guardian*, April 22, 2020, https://www.theguardian.com/world/gallery/2020/apr/22/animals-roaming-streets-coronavirus-lockdown-photos.

would also result in the creation of appropriate habitats in many places that are now totally degraded. For example, we can improve the habitat quality of wastelands and small wetlands, meadows, riverbanks, coastal areas, etc. This will also serve to strengthen the natural resource base in rural areas and generate local and sustainable employment generation, although it may only be at the subsistence level.

Nevertheless, in a pandemic and other similar crises when the other more globalized forms of income generation and employment opportunities are reduced, even subsistence level opportunities will provide a rural livelihood safety net to the people. This contention is supported by several "Aichi Biodiversity Targets" included in the "Strategic Plan 2011-2020" of the Convention on Biological Diversity (CBD). Target 11 of the 20 Aichi targets calls for the conservation of at least 17 percent of terrestrial and inland water as well as 10 percent of coastal and marine areas by 2020. Target 14 emphasizes the restoration and protection of ecosystems contributing to health, livelihoods, and well-being, especially taking care of "the needs of women, indigenous and local communities, and the poor and vulnerable."[19] One major obstacle to offering such extended protection is the limited funding available for biodiversity conservation, although other factors like poor governance, the lack of appropriate policies, and low priority are also

[19] See Aichi Biodiversity Targets, https://www.cbd.int/sp/targets/.

responsible.[20] With developing countries having funding constraints, international aid and assistance are vital.

Another environmental effect of reduced industrial activity is that there have been tangible improvements in air and water quality, demonstrating the high self-regulatory (cybernetic) abilities and resilience of nature. These improvements in environmental quality suggest that though human activities have inflicted a lot of damage to all natural ecosystems such as forests, rivers, lakes, wetlands, oceans, and the atmosphere, which are often thought to be irreversible, the wellspring of nature's ability to self-restore and auto-rejuvenate lies much deeper and stronger than is believed. However, if we choose to go back to our polluting development model of "business as usual," the gains will be lost.

Thus, if we believe in the old adage that "every dark cloud has a silver lining," COVID-19 has shown that there is scope for an all-pervasive rejuvenation of nature and a restoration of local production, which we might not have realized earlier. This is the new ecosystem-centered model that the "baskets of berries" are thought to symbolize. In such a global-local (also called glocal) system, global knowledge and information will be disseminated with the aid

[20] Agustin Berghöfer et al., "Sustainable Financing for Biodiversity Conservation – A Review of Experiences in German Development Cooperation," UFZ Discussion Paper 1 / 2017, UFZ – Helmholtz Centre for Environmental Research GmbH, Leipzig, Germany, 2017.

of technology. This will be coupled with local and predominantly organic agricultural production, and will be accompanied by environment-friendly and small-scale industrial and renewable energy enterprises.

These approaches should be accommodated in our post-COVID restoration plan. In this model, conservation would have to be all-encompassing, promoting sacred groves, city parks, village gardens, ponds, small streams, and other community-protected areas (fig. 3). One important task for this rejuvenation will be to attract the small and medium farmers back to agriculture to boost local production with organic farming. Can we be imaginative and bold enough to introspect upon such a world where co-existence with nature along with a renewed respect for it, would become the distinguishing features? The philosophical basis for this changed perspective will be provided by ecocentric worldviews, the exact nature and tenets of which will be based on the evolving perceptions about humans increasingly becoming "partners" with and "participants" in nature[21] in a given culture, moving away from being its owners and ruthless exploiters at times.

[21] Wim Zweers, "Radicalism or Historical Consciousness: On Breaks and Continuity in the Discussion of Basic Attitudes," in *Ecology, Technology and Culture,* eds. Wim Zweers and Jan J. Boersema (Cambridge, UK: The White Horse Press, 1994), 63–71.

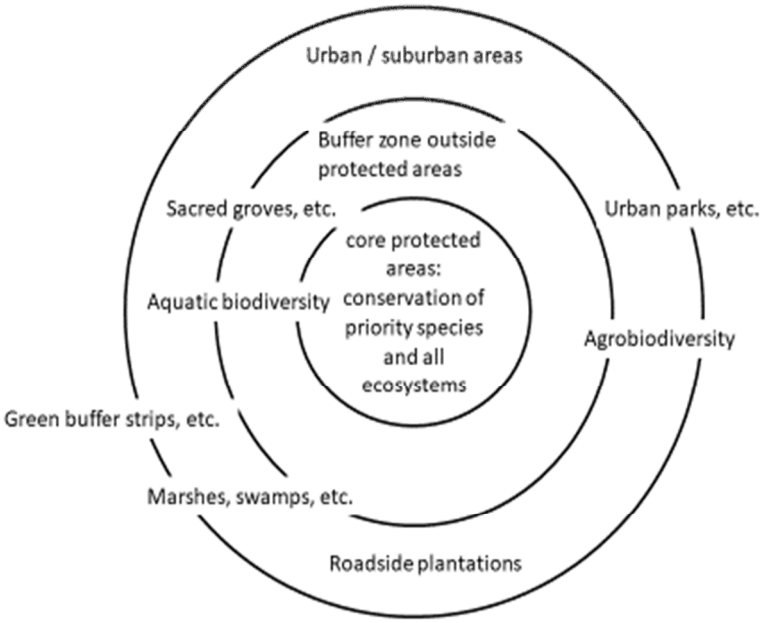

Figure 3. An inclusive, post-COVID approach to conservation.

The Development Conundrum

One of the biggest stumbling blocks to such a paradigm shift will be our attraction to and dependence on what the Gandhian economist-philosopher Joseph C. Kumarappa[22] termed as the "economy of violence" as opposed to that of "permanence" of an "economy of nature." Kumarappa has been described as the "unsung hero" of green economy and alternative development in India. He had made pioneering contributions to the concepts of decentralized and

[22] Joseph C. Kumarappa, *Economy of Permanence*: *A Quest for a Social Order Based on Non-Violence* (Rajghat, Varanasi: Sarva Seva Sangh Prakashan, 1957).

sustainable development at a time when these ideas were practically unheard of.[23]

Interpreting Kumarappa's concept of "violence" vs. "permanence" in the present context, we can use the example of a high dam being built to commission a massive hydroelectric project. In the process, this destroys the habitats of a large number of plant and animal species and displaces indigenous people, thereby becoming a development of "violence." Does this imply that the development of "permanence" is against science and technology? The answer is no. If micro- or mini-hydel projects (5–100 kilowatts and ≈100 kilowatts–1 megawatt respectively) or even small hydel projects (1–15 megawatts) are built with minimum disruption of the stream and catchment ecology as well as to the life, livelihood, and culture of the local inhabitants, then the "violence" is minimized, if not totally eliminated, and there is progress toward "permanence." The same could be said about solar panels, biomass energy, and organic farming, etc.

In a sense, the COVID-19 crisis may also be dubbed as a fallout of the economy of "violence" and greed. As Gandhi had once said, the latter was incapable of being satisfied.

[23] K. Gireesan et al, "Exploring the Ideas of J.C. Kumarappa: The 'Unsung Hero' of Green Economy and Alternative Development in India," *Mainstream* 56, no. 17 (April 4, 2018), http://mainstreamweekly.net/article7871.html#:~:text=April%2014%2C%202018,Exploring%20the%20Ideas%20of%20J.C.%20Kumarappa%3A%20The%20'Unsung%20Hero',and%20Alternative%20Development%20in%20India&text=Kumarappa%20(1892%2D1960)%20was,economics%2C%20planning%20and%20ecological%20development.

SARS-CoV-2 is believed to have a proximal origin from the bat *Rhinolophus affinis* and/or the Malayan pangolin *Manis javanica*. The latter species is included in the CR IUCN category as well as in the Appendix I[24] of the Convention on International Trade of Endangered Species of Fauna and Flora (CITES). This indicates that the issue of COVID-19 is linked with illegal wildlife trade, especially in a large area of Asia extending from Pakistan in the west to the Philippines in the east, where four species of pangolins are found and hunted for their scales, claws, and meat.

The poaching pressure on the pangolin can be gauged from the fact that the Malayan pangolin, which was in a relatively safe NT IUCN category in 1996, moved to the most highly threatened CR category with an 80 percent reduction in its numbers by 2019. Of the other three species, the Chinese pangolin and the Philippine pangolin are placed in the CR category or are on the verge of extinction. The Indian pangolin has moved up to the EN IUCN category with pressure over it increasing because of the reduced abundance of the other species. Over the recent decades, the hunting of all the four species of pangolins have drastically increased from subsistence to trade on the national and international scale, and these species are increasingly appearing in the "wet markets" in different parts of Asia, especially China. Thus, these species are hapless victims of

[24] See Convention on International Trade in Endangered Species of Wild Fauna and Flora, "Appendices," November 26, 2019, https://www.cites.org/eng/app/appendices.php.

the economy of violence in a literal sense, which has finally elicited backlash from nature.

The Fallacy of GDP as a Measure of Progress

Another formidable barrier to a paradigm shift in the concept of development is also constituted by our single-minded pursuit of promoting GDP growth. According to Costanza et al.,[25] GDP growth has become a metric that has lost its relevance and utility. These authors reason that GDP was a relevant indicator of progress when it was first introduced in the 1940s. It signified increased economic activity that generated employment and income.

However, in the present context, GDP increase has led to the increased depletion of natural resources while it hampers adoption of more sustainable models of development. As examples, Costanza et al. cited that the oil spills due to the Deepwater Horizon rig explosion in the Gulf of Mexico in 2010 and the effects of Hurricane Sandy in 2012 led to an increase in US GDP because they induced economic activity through the much-needed repairs and rebuilds of the hurricane's aftermath. They recommended shifting to other indicators that took into account environmental costs and benefits, net profit and wealth generation, among others.[26]

[25] Robert Costanza et al, "Development: Time to Leave GDP Behind," *Nature* 505, no. 7483 (January 15, 2014): 283–285.

[26] Costanza et al., "Development."

Among the alternative metrics, Costanza et al.[27] suggested the adoption of adjusted economic measures that take into account annual income, net savings, wealth generation, environmental costs (such as that accruing from pollution of water bodies or destruction of forests or wetlands) and benefits like pollution control measures or groundwater recharge, etc. A promising index that they had cited is the Genuine Progress Indicator (GPI), which considers expenditure—an essential component of GDP—but makes adjustments against factors such as volunteer work, crime, pollution, etc. It also factors in income distribution and therefore the welfare of the poor and those from low-income groups. As such, this metric may be considered more ethical and environment-friendly. Another study [28] showed that GDP and GPI had high correlations between 1950 and 1978, after which they showed increasing divergence as rising environmental and social costs began to outweigh the benefits of increased GDP.

Besides the objective metrics, subjective measures of development also need to be given more importance. Often these indicators more accurately reflect the parameters that make life more worthwhile and content and measure societal progress. Higher income boosts happiness among low-income group people, but this does not continue to increase

[27] Costanza et al., "Development."

[28] Ida Kubiszewski et al., kiwskiopment."opment.""): 283–285. nd," ehind," –71.994), 63–71*Ecological Economics* 93 (September 2013): 57pment."): 283–285. nd," ehind," –71.994), 63–71.63–

as the income increases.[29] The World Values Survey or the Gross National Happiness Index (GNHI) of Bhutan are examples of such subjective measures. The GNHI addresses nine domains: psychological well-being, health, education, time use, cultural diversity and resilience, good governance, community vitality, ecological diversity and resilience, and living standards. The GNHI estimates a total of thirty-three indicators under these nine domains to arrive at a single index number.[30]

A comprehensive approach that integrates both objective and subjective indicators comprises Weighted Composite Measures. An example of such measures is the Happy Planet Index (HPI) of 2006 that takes into account four parameters: Life Expectancy, Well-being, Ecological Footprint, and Inequality of Outcomes. If a country scores high on the first two and has low scores for the third and fourth parameters, then it will score high on the HPI scale.[31] Thus, this index takes into account ecological impact and socio-economic equity.

[29] Richard Layard, *Happiness : Lessons from a New Science* (USA: Penguin Books, 2005); Daniel Nettle, *Happiness: The Science Behind Your Smile* (Oxford University Press, 2005).

[30] OPHI, *Bhutanrd University Press, 2005).r Smil.* Oxford Poverty & Human Development Initiative, 2020, https://ophi.org.uk/policy/national-policy/gross-national-happiness-index/.

[31] NEF, *Happy Planet Index*. New Economics Foundation, UK, 2006, http://happyplanetindex.org/.

In its analysis of the impact of coronavirus on the global economy, *The Guardian* commented that GDP, which lacks reliability even under normal situations, would be even more inadequate in the uncertain scenario of a COVID-ravaged world.[32] Joseph E. Stiglitz pointed out that on the one hand measures taken to reduce pollution may lower GDP growth, while on the other, an increase in GDP indicating a high-performing economy may not be reflected in the people's perceptions of their own standards of living.[33] The local and regional inequities of development, which have pushed the less affluent sections of the society in developing and many developed countries to increasing pauperization during COVID-19, is poorly reflected in GDP metrics. At the same time, the environmental gains made during the COVID-19-induced economic slowdown will not be reflected in GDP statistics either. An increase in GDP is weakly correlated with the quality of life of many people. The capability approach provides another alternative to the emphasis on GDP in defining a quality life.[34] Therefore, all these

[32] Philip Carlsson-Szlezak, Martin Reeves, and Paul Swartz, "What Coronavirus Could Mean for the Global Economy," *Harvard Business Review*, March 3, 2020, https://hbr.org/2020/03/what-coronavirus-could-mean-for-the-global-economy.

[33] Joeph E. Stiglitz, 'GDP Fetishism," *The Economists' Voice* 6, no.8 (September 15, 2009): 1–3, https://doi.org/10.2202/1553-3832.1651.

[34] Harvard University Press – Blog, "*Martha Nussbaum on the Capabilities Approach to Human Development*," May 26, 2011, https://harvardpress.typepad.com/hup_publicity/2011/05/martha-nussbaum-creating-capabilities-human-development.html#:~:text=As%20an%20alternative%20to%20the,help%20their%20people%20do%20so.

alternative approaches and indices suggest that a mere consumption-oriented economic resurgence will be unable to properly prepare the world economy against any zoonotic depredations in the future.

Arguing for Ecocentrism

Ecocentrism can be interpreted in several ways. It could comprise faithfully attaching intrinsic (even religious or spiritual) values to non-human living and non-living entities in nature. It could transcend to an attainment of the "self-realization" of Deep Ecology.[35] At the same time, it could also be interpreted as eco (*oikos*) centered, where we pay more attention—even to the point of reverence—to the "house" (*oikos*) in which we live. In doing so, we have to pay more attention to the health of the smallest units, the ecosystems, and maintain their integrity, quality, and productivity.

A free transfer of life and environment-saving technology from the developed to the developing nations has been envisioned in the pivotal international agreement on climate change, that is, the United Nations Framework Convention on Climate Change (UNFCCC).[36] There has to be a global consensus and a philanthropic attitude on the part of the

[35] Arne Naess, "The Shallow and the Deep, Long-Range Ecology Movement. A summary," *Inquiry: An Interdisciplinary Journal of Philosophy* 16, nos. 1–4 (1973): 95–100.

[36] United Nations, "United Nations Framework Convention on Climate Change" 1992, FCCC/INFORMAL/84 GE.05-62220 (E) 200705.

developed nations to enable this knowledge dissemination, which should energize rather than stifle decentralized development at the lowest level of living-non-living integration (ecosystems). Can we hope that instances of such sharing would be there among the characteristic features of a post-COVID, more ecocentric world? The need for an increasingly ecocentric approach to development was not evident after the four pandemics that we faced in this century. The probable reasons could be that the 1957, 1968, and 2009 pandemics were confined to a few countries; and while the 1918 pandemic was globally devastating, environmental degradation was not widespread and awareness was low.

Along with increasing North–South cooperation, efforts would have to be undertaken by the developing countries to achieve self-reliance with the sustainable management of natural, especially biological resources. The ecosystem-centric development can bring forth "partnerships" with and "participation" in nature. The BP of each country have to support their EP by consuming more local products than they are doing today.

Gandhi's idea of "village swaraj" (village self-governance) could show the path ahead. Gandhi visualized an "ideal village" as one having perfect sanitation with its houses constructed of materials available within its five-mile radius. It will have a common grazing ground. It "will produce its own grains, vegetables, and fruit, and its own khadi [hand-spun

textile]."[37] The core concepts of village swaraj are very relevant today, although Gandhi's ideas can be enriched by improved techniques in organic farming, agroforestry, water harvesting, and small-scale renewable energy generation, among others. NGOs have a big role to play in building the bridge between the BP and the EP to keep the number of ER in check.

On a philosophical note, we could think of a society valuing "relations" and "dialogues." Some of us—following the footsteps of Martin Buber—will hope that we will be able to move to the "spheres in which the world of relations arises [in] our life with Nature . . . the relation sways in gloom, beneath the level of speech . . . and when we address them as *Thou*, our words cling to the threshold of speech."[38] The experiences gathered during this pandemic ought to induce the people to go for a new and improved definition of development, a development that is consonant with ecosystems, landscapes, and nature as a whole. This realization is already spreading as reflected in Aichi targets 1 and 2. These targets urge people to be aware of the values of biodiversity and to integrate these values into local development and poverty reduction strategies and plans.[39]

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[37] Mohandas K. Gandhi, *Village Swaraj*, compiled by H.M. Ahmedabad (Ahmedabad, India: Navajivan Publishing House, 1962).

[38] Martin Buber, *I and Thou*, First South East Asian ed. (London: Continuum Books, [1923] 2005), 13.

[39] See Aichi Biodiversity Targets, https://www.cbd.int/sp/targets/.

Epilogue

I would like to conclude with these lines from "We Two, How Long We Were Fool'd" from Walt Whitman's *Leaves of Grass*.

> We are Nature, long have we been absent, but
> now we return,
> We become plants, trunks, foliage, roots, bark,
> We are bedded in the ground, we are rocks,
> We are oaks, we grow in the openings side by side,
> We browse, we are two among the wild herds
> spontaneous as any,
> We are two fishes swimming in the sea together, …
> We have circled and circled till we have arrived
> home again, we two,
> We have voided all but freedom and all but our
> own joy.[40]

This poem has been interpreted in many ways but since it has a universal appeal across time, we could also read this as the return of environmental refugees as well as biosphere people to nature. In the case of the former, it is a return to

[40] Walt Whitman, "We Two, How Long We Were Fool'd," in *Leaves of Grass*, (Project Gutenberg 1998), bk. 4, http://www.gutenberg.org/files/1322/1322-h/1322-h.htm.

the folds of nature. For the latter, it is rediscovering the importance of nature and striking a balance between the global and local facets of development to make it more complete and inclusive. The last two lines quoted here can signify "homecoming," and it is hoped that the post-COVID era will carry forward Walt Whitman's message.

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