### Shell

#### Interpretation: Debaters must disclose all previously read positions on open source with highlighting on the 2021-22 NDCA LD wiki after the round in which they read them.

#### Violation – screenshots in the doc prove I do and they don’t

A screenshot of a computer

Description automatically generated

#### 1] Debate resource inequities—you’ll say people will steal cards, but that’s good—it’s the only way to truly level the playing field for students such as novices in under-privileged programs.

#### Open source does equal the playing field

Overing 18 – Bob Overing, LD Scholar (“Holiday Disclosure Post #6 – 10 Things Edition” JANUARY 12, 2018. http://www.premierdebate.com/disclosure-post-6/)

**Open source improves on usual disclosure practices** in the obvious way – **you can read their evidence for better prep**aration – and in a number of smaller ways too. **It solves the analytics problem** I discussed above, **so round-altering uncarded arguments are available** (though this doesn’t really apply to Harvard-Westlake), **and it gives access to evidence from paywalled articles**. **Every season I coach debaters who lack access to major databases; for schools without robust online library offerings or teams without college coaches, this matters a lot**.

#### 2] Evidence ethics –

#### 3] Depth of clash –

### ROB

#### The Role of the ballot is to the test if the resolution is true.

#### 1] Inclusion:

#### 2]. Constitutivism:

#### 3] Reject the western binary of truth and futurism in favor of a more nuanced understanding of the world.

Graham Priest, Distinguished professor of philosophy at City University of New York and professor emeritus at the University of Melbourne. His latest book is One (2014), Beyond true and false, 5 May 2014, <https://aeon.co/essays/the-logic-of-buddhist-philosophy-goes-beyond-simple-truth> ///BA PB

At the core of the explanation, one has to grasp a very basic mathematical distinction. I speak of the difference between a relation and a function. A relation is something that relates a certain kind of object to some number of others (zero, one, two, etc). A function, on the other hand, is a special kind of relation that links each such object to exactly one thing. Suppose we are talking about people. Mother of and father of are functions, because every person has exactly one (biological) mother and exactly one father. But son of and daughter of are relations, because parents might have any number of sons and daughters. Functions give a unique output; relations can give any number of outputs. Keep that distinction in mind; we’ll come back to it a lot. Now, in logic, one is generally interested in whether a given claim is true or false. Logicians call true and false truth values. Normally, and following Aristotle, it is assumed that ‘value of’ is a function: the value of any given assertion is exactly one of true (or T), and false (or F). In this way, the principles of excluded middle (PEM) and non-contradiction (PNC) are built into the mathematics from the start. But they needn’t be. To get back to something that the Buddha might recognise, all we need to do is make value of into a relation instead of a function. Thus T might be a value of a sentence, as can F, both, or neither. We now have four possibilities: {T}, {F}, {T,F} and { }. The curly brackets, by the way, indicate that we are dealing with sets of truth values rather than individual ones, as befits a relation rather than a function. The last pair of brackets denotes what mathematicians call the empty set: it is a collection with no members, like the set of humans with 17 legs. It would be conventional in mathematics to represent our four values using something called a Hasse diagram, like so: {T} ↗ ↖ {T, F} { } ↖ ↗ {F} Thus the four kotis (corners) of the catuskoti appear before us. In case this all sounds rather convenient for the purposes of Buddhist apologism, I should mention that the logic I have just described is called First Degree Entailment (FDE). It was originally constructed in the 1960s in an area called relevant logic. Exactly what this is need not concern us, but the US logician Nuel Belnap argued that FDE was a sensible system for databases that might have been fed inconsistent or incomplete information. All of which is to say, it had nothing to do with Buddhism whatsoever. Even so, you might be wondering how on earth something could be both true and false, or neither true nor false. In fact, the idea that some claims are neither true nor false is a very old one in Western philosophy. None other than Aristotle himself argued for one kind of example. In the somewhat infamous Chapter 9 of De Interpretatione, he claims that contingent statements about the future, such as ‘the first pope in the 22nd century will be African’, are neither true nor false. The future is, as yet, indeterminate. So much for his arguments in the Metaphysics. The notion that some things might be both true and false is much more unorthodox. But here, too, we can find some plausible examples. Take the notorious ‘paradoxes of self-reference’, the oldest of which, reputedly discovered by Eubulides in the fourth century BCE, is called the Liar Paradox. Here’s its commonest expression: This statement is false. Where’s the paradox? If the statement is true, then it is indeed false. But if it is false, well, then it is true. So it seems to be both true and false.

### Framing

#### The metaethic is dependent origin or the idea that we cannot separate any specific experience or object from the context of other experiences or objects. In short, everything is interconnected.

#### First, its impossible to establish one thing as the cause of something else, instead every event is interrelated. Think universal butterfly effect.

David Cummiskey, Guy with wrong opinions about Kant and professor at Bates college, and Alex Hamilton, Some grad student idk, Dependent Origination, Emptiness, and the Value of Nature http://blogs.dickinson.edu/buddhistethics/ Volume 24, 2017 //BA PB

The first aspect of dependent origination concerns the nature of cause and effect relations. No single thing comes into existence by itself, and the continued existence of that thing is, in fact, an effect of a series of other things, all of which are, in turn, simultaneously causes and effects. To say that x is the cause of y is not to say that x is essentially a cause and y is essentially an effect. Rather, although x is a causal factor of y, a multifaceted web of causation always produces any effect (37). In addition, as Westerhoff explains in his discussion of Nāgārjuna, “Cause and effect cannot be substantially distinct. This is because although the effect depends existentially on the cause (if the cause did not exist the effect would not exist), the focus on the cause depends at least notionally on the effect (if there was no effect the cause would not be called ‘cause’).” We can say that “the thunderstorm caused the Douglas Fir to fall,” but here the relationship we establish between the thunderstorm, as the specified cause, and the tree falling is a conventional one. The idea that all our concepts impose pragmatically useful distinctions on a seamless and undifferentiated flow of phenomena is controversial and we cannot adequately defend it in this paper. Both Siderits and Garfield develop the argument and its points of contact with contemporary Western philosophy. The rough idea, however, is fairly clear. First, the causal web of conditions which led to both the storm and the tree falling can be expanded indefinitely: the storm was itself the effect of certain wind speeds, barometric pressure, humidity, ocean temperatures, and so on; likewise, the tree’s falling was also the effect of its age, its height, and the soil where its seed initially fell. The isolation of a single cause for a single effect is inescapably a convention that is relative to a given frame of reference. For example, unlike when the Douglas fir falls after the storm, when a newly planted maple tree falls over in the yard after the first rain, the cause is that the gardener did not pack the soil properly, leaving the root ball too loose and free to easily fall over. The soil should not be over-packed, but it also must be secure enough to hold the tree. It is not the rainstorm alone that causes the tree to fall; the rain was expected and the tree should have been able to withstand normal wind and rain. Of course, this is not to deny that the tree would not have fallen without the rain; the rain is part of the interconnected causal nexus that preceded the tree falling in the garden. The causal story also includes the aesthetic reasons the tree was planted in that particular spot and the reasons the soil was poorly packed; perhaps the gardener was distracted by personal problems and thus did a poor job that day. Alt-hough conventionally and pragmatically, we mark out and focus on a cause, in reality all events are dependent on and arise from a seamless web of interdependent factors. The complete causal story includes the undifferentiated complete history of the universe.

#### Second, objects are defined relationally. Just as a car has no meaning without car parts, and car parts have no meaning without a car, the world is defined as a series of parts and wholes.

David Cummiskey, Guy with wrong opinions about Kant and professor at Bates college, and Alex Hamilton, Some grad student idk, Dependent Origination, Emptiness, and the Value of Nature http://blogs.dickinson.edu/buddhistethics/ Volume 24, 2017 //BA PB **[2]**

The second analytically distinct aspect of dependent origination is the (mereological) mutual dependence of parts and wholes. The idea of a “whole” is predicated upon the existence of parts that compose it. Without a whole, the “parts” cease to be related to one another; the concept of “parts” becomes unintelligible without the contributory reference of a whole (Dalai Lama 37). All parts are also wholes, composed of their own parts, and all wholes can be considered parts of other wholes. A car is an object, but of course it is also a whole that consist of parts. The carburetor and wheels are different functional parts of my car, but each also is composed of parts. The wheels are also wholes that are composed of tires and rims, and the steel-reinforced tires also have parts, etc. But the specification of the parts of a whole is also dependent on the purpose or interest at issue. For example, we might also break a car down into parts to recycle it; the metal of the rims and the steelreinforcement of the tires are the metal parts, and they can be distin-guished from the rubber of the tires and hoses. The wheels are no longer a relevant part. As with cause and effect, the dichotomy between parts and whole exists only in relation to particular interests. The same holds for the parts of an animal. We can break down the whole into particular organs, or into the different functional systems, the circulatory system, nervous system, digestive system, etc., or different cellular components. For different reasons, we break down the whole into different constitutive parts.

#### Because every object is defined by other objects, this entails that nothing has an essential essence that makes it what it is and gives it value.

David Cummiskey, Guy with wrong opinions about Kant and professor at Bates college, and Alex Hamilton, Some grad student idk, Dependent Origination, Emptiness, and the Value of Nature http://blogs.dickinson.edu/buddhistethics/ Volume 24, 2017 //BA PB **[3]**

This conclusion is a Buddhist anticipation of what is now called the “myth of the given” in Western philosophy (Garfield 35-36). Consider the following response to idea that our concepts do not represent and map out ultimate reality. In response to the pragmatic and contextual nature of our concepts, one might nonetheless maintain that the best explanation of the success of our concepts is that they are correct; they capture the real essence of the underlying reality. In one sense, this is indeed correct. When we are successful, the success is the result of the dependent co-arising of the phenomena. The question, however, is whether the concepts succeed because they capture the distinct essences of an underlying reality. According to the doctrine of dependent co-arising, the underlying phenomena are interdependent and individual identity claims are conventional designations of an underlying interdependent reality. But if this is true, then no thing or type has a distinct “essence.” As William Edelglass and Jay Garfield describe, “to have an essence is to exist independently, to have one’s identity and to exist not in virtue of extrinsic relations, but simply in virtue of intrinsic properties. Because all phenomena are interdependent, all are [devoid of essence] in this sense” (Edelglass and Garfield 27).4 This is the doctrine of emptiness. It is a common unreflective assumption that different things have different essential natures and intrinsic characteristics that distinguish them and constitute their identity. But we have seen that all phenomena are subject to dependent origination and co-arising; everything must be defined in relation to other things, and these relations determine our conception of the nature of any given thing. The particular conceptual relations are based on our particular interests and our perceptual and conceptual capacities. The things themselves are empty of any intrinsic essence. Nāgārjuna further develops the doctrine of emptiness applying it to the concepts of causality, time, and space, and to emptiness itself, but we will not develop these arguments here.5

#### However, if everything is devoid of essence then intrinsic value is impossible. Instead, the relational nature of life means that any attempt of the self to avoid harm must also apply to others.

David Cummiskey, Guy with wrong opinions about Kant and professor at Bates college, and Alex Hamilton, Some grad student idk, Dependent Origination, Emptiness, and the Value of Nature http://blogs.dickinson.edu/buddhistethics/ Volume 24, 2017 //BA PB **[4]**

Buddhism begins with the reality of suffering, illness, and death and argues that **all sentient beings strive to avoid suffering; ending suffering is in this sense a universal end. The (dis)value of suffering is conditional and relational but also an impersonal end**. Suffering is rooted in ignorance, selfishness, and aggression. The Buddhist middle way aims to reduce and transcend suffering by developing wisdom, virtue, and clarity of awareness (which is achieved through meditative practice). Buddhist ethics aims at a form of enlightenment that ends suffering. We will first explore the relationship between emptiness and Buddhist ethics in the next section, and then argue that **the doctrine of dependent origination expands the conception of value beyond mere individual suffering to include the web of interdependent relations that are the conditions of suffering and enlightenment**. The value of nature is thus a conditional value and the condition of its value is its relation to sentient life. The conditional value of nature, however, is not its instrumental value. Nature is conditionally valuable as an end, not a mere means. 4. Suffering and the Virtue of Compassion The doctrine of emptiness is an extension of and corollary to the perhaps better-known Buddhist doctrine of “no-self.” **There is no essential self that constitutes the essence of a human being. Instead each person is “made-up” of an amalgamation of cognitive, conative, sensory, and physical elements.** For classical Buddhism the components (the five skandhas) of the self are: (i) physical body, (ii) feeling and sensations of pleasure and pain, (iii) perception, (iv) volition, and (v) consciousness of physical and mental sates. Details aside, the conception of the self here is similar to David Hume or Derek Parfit’s accounts of personal identity.12 Since this aspect of Buddhist doctrine has received so much attention, we will not recount it here. We are instead interested in the resulting conception of Buddhist ethics and morality, and in particular in extending this conception to environmental ethics. The self like all else is subject to dependent origination and the doctrine of emptiness. In most contexts, there is nothing wrong with referring to oneself or others, but **there is no essential self that constitutes our identity at any one time or over time**. At the core of Buddhist ethics is the conviction that egoism is rooted in delusion and in particular, a misconception of the self with its metaphysically indefensible self/other dichotomy. If there really is no substantial self, then there is no real basis for egoism. On the other hand, **suffering is something that all (dependently originated) sentient beings are moved to avoid**. Conceptually, suffering marks off negative experiences. If suffering is unsatisfactory, causing suffering is unwholesome; this is true of all suffering as such. **If all suffering is bad, then we have a reason to prevent or alleviate suffering; and our original aversion to suffering provides a reasonable determining ground for compassion and loving-kindness to all sentient beings. A desire to prevent “one’s own suffering” leads us to a desire to prevent all suffering, period**. Universal compassion, unlike egoism, is rooted in a clear perception of nature of reality. Some argument of this form is essential for any Buddhist moral theory.

#### Thus, the standard is to refrain from causing suffering.

### Offense

#### I affirm the resolution as a general principle: Member nations of the World Trade Organization ought to reduce intellectual property protections for medicines.

#### IP regimes are tied to rising biodiversity loss.

**PAMUN 14 –** “PAMUN Xviii Research Report— Question Of Intellectual Property And Biodiversity” [http://asp-edu.net/pamun/pamun2013/wp-content/uploads/2014/04/OK\_EDITED\_-UNCTAD-biodiversity-and-IP-1.pdf] // ahs emi

During the last few years, biodiversity has been lost at an unprecedented rate throughout the world in every ecosystem. According to the FAO, about 75% of the genetic diversity found in agricultural crops has been lost over the last century, and this phenomenon continues. It is imperative that we conserve agricultural biodiversity: higher biodiversity of agricultural crops helps increase yield stability and soil fertility and gives species the ability to adapt to changing conditions. High agricultural biodiversity also helps protect our health by ensuring sustainable production in medicinal plant use systems. Agricultural biodiversity loss and the present IPR legislation are inextricably tied. IPRs continue to homogenise agricultural production and medicinal plant use systems and could reduce crop variety development. Our health and our environment is negatively affected, and it is of utmost importance to conserve our agricultural biodiversity. Evolution of IPRs on biological resources As stated before, IPRs are rights to new ideas and information, which allow the creator to prevent the imitation or the commercial exploitation of his/her creations. IPRs have existed for centuries; however, the use of IPRs on living organisms such as GRs is a recent phenomenon. In 1930, the U.S. government passed the U.S. Plant Patent Act, which granted IPRs to new plant varieties with the exception of sexual and tuber-propagated plants. Other countries also extended such forms of IPRs, and in 1957, the International Union for the Protection of New Varieties of Plants (UPOV) was formed, which was established by the International Convention for the Protection of New Varieties of Plants that was signed in 1961. The convention was revised in 1972, 1978, and 1991 in Geneva, and each member state is expected to adopt laws that meet the requirements of the convention. With the latest revision in 1991, the convention recognizes new plant varieties as intellectual property and extended international PBRs. Furthermore, in 1972, the U.S. Supreme Court ruled that the patent claim made by the microbiologist Ananda Chakrabarty for a genetically engineered bacterial strain was permissible, which made it clear that anything man-made, including human genetic material, could be patentable. The legally binding TRIPS agreement in 1995 (explained in detail below) further imposed private IPRs on plant varieties, increasing the control of governments and large corporations over biogenetic resources. International Treaties and Agreements The link between IPRs and biodiversity has been shaped by numerous agreements and institutions. The Convention on Biological Diversity (CBD) and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) are the two principal agreements on this issue. Moreover, organizations such as the World Intellectual Property Organization (WIPO) and the World Trade Organization (WTO) have also become more active in dealing with this issue, and various megadiverse countries (see Major Countries Involved for definition) such as India, Costa Rica, and Mexico are passing laws in order to deal with this issue. The most important agreement on the conservation of biodiversity is the Convention on Biological Diversity (CBD), which is often regarded as the founding document of global commitment to sustainable growth. The CBD is a legally binding, multilateral treaty signed on June 5th, 1992. It has been signed by 168 nations, 157 of which have ratified the convention. The convention has three main goals: the “conservation of biological diversity”; the “sustainable use of the components of biological diversity”; and the “fair and equitable sharing of the benefits arising out of the utilization of genetic resources”. The treaty recognizes the sovereign right of states over GRs, and it also demands the respect and preservation of associated traditional knowledge at the national level. In fact, article 8(j) of the CBD states: ““Each contracting party shall [...] respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge innovations and practices”, thus recognizing the collective rights of indigenous and local communities, and encouraging member nations to follow the ABS provisions of the agreement, which aim to share GRs equitably with the indigenous communities. Moreover, to improve the implementation of the CBD, two supplementary agreements to the CBD have been signed: the Cartagena Protocol of 2002 and the Nagoya Protocol of 2010. The Nagoya Protocol (Appendix IV), which is explained in the Previous Attempts to Solve the Issue section, deals with the implementation of the third objective: fair and equitable sharing of the benefits arising out of the utilization of genetic resources. Another important legally binding agreement is the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) in 1995. All 162 members of the WTO are signatory states of the agreement. Before the TRIPS agreement was signed, IPRs were restricted within countries; however, with the national treatment article in the TRIPS agreement, every signatory state should ensure that the rights given by IPRs are applied to locals and foreigners alike. In relation to plant varieties, it is important to note that the TRIPS agreement requires that plant varieties, along with microorganisms and microbiological processes, be eligible for IPR protection. In article 27.3(b) of the TRIPS agreement, signatory member states are not permitted to exclude microorganisms and microbiological processes from patentability, and they are expected to provide protection of these new plant varieties through patents, or an “effective” sui generis system. In other words, the agreement requires an exclusive protection for plant varieties, be it in the form of patents or a new sui generis system, which the WTO decides is effective or not. Another form of protection that many developing countries are also adopting as a sui generis system is the model of plant variety protection that is provided by the UPOV Convention (PBRs), whose standards are pretty much equivalent to patent protection. Hence, the TRIPS agreement not only imposes exclusive, private IPRs on biological resources, but it also does not attempt to protect indigenous and local community knowledge. Unlike the CBD, which aims to protect TK and maintain biodiversity, the TRIPS agreement legitimizes the commercial use of biodiversity-related knowledge. However, the TRIPS agreement does require the review of Article 27.3(b)–the article that prohibits the exclusion of microorganisms from patentability and provides protection for plant varieties–which has facilitated discussion on the issues with the article (see ‘Previous Attempts’ for detailed information). It is also important to note that both agreements are highly flexible, even though they contradict each other in many aspects. Many articles of the TRIPS agreement can be used by indigenous communities to protect their interests. Article 8 allows members to protect public interest through legal measures and environmental protection could be justified as as being in "public interest". Moreover, article 27(2) allows members to exclude inventions from patentability to safeguard against "serious prejudice" to the environment. The CBD, on the other hand, ensures that it does not conflict with the implementation of any other international agreement. Article 22 of CBD states: “The provisions of this Convention shall not affect the rights and obligations of any Contracting Party deriving from any existing international agreement, except where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity”. This article provides countries with a leeway; although both agreements are legally binding, countries can implement the TRIPS agreement without adhering to obligations of the CBD. Impacts of present IPR legislation Exploitation of traditional knowledge Existing IPR systems, particularly patents, increase the risk of exploitation of traditional knowledge. Existing IPRs are expensive and challenging to acquire, failing to provide local and indigenous communities incentives to protect or capitalize on their traditional knowledge even though traditional knowledge is often shared by all members of the community and passed through the generations. Commercial Exploitation of Plant Varieties and GRs The TRIPS agreement is intended to provide private IPRs on any products, be they biogenetic resources or not, in order to ensure that trade goes smoothly and corporate interests are protected internationally. In the process, the agreement provides exclusive control of plant varieties to corporations and individuals that they have patented. The privatization of IPRs as a result of the TRIPS agreement has caused commercial and industrial interests to control the resources of developing countries that are rich in biodiversity, leading to biological uniformity and in turn biodiversity loss (explained below). Besides, these private commercial interests are encroaching upon common indigenous and local community knowledge, which is another negative impact of the TRIPS agreement. Biological Uniformity The present IPR legislation causes biological uniformity because of growing private commercial interests, which directly causes biodiversity loss. Countries that extend IPRs to plant varieties will be establishing an IPR system where few corporations and individuals prohibit others from making or using the protected variety or any product containing protected genetic information, and push its production for profits. Farmers will be faced with production restrictions, while scientists will be faced with research restrictions. All in all, the present IPR legislation not only discourages the growth of new and different plant varieties, but it also restricts researchers from freely using the genetic information for research into diseases or for making new and more effective plant varieties. Hence, this reduces the availability of biodiversity and leads to the homogenization of agricultural production and plant use systems. For example, Monsanto, an agrochemical and agricultural biotechnology corporation that is facing a surge of lawsuits, is also accused of biological uniformity. It owns such a large portion of the world's cotton seed supply that cotton farmers are not given access to non-GM cotton seeds. These farmers are also not allowed to save, reuse, or even study the seeds due to biotech IPR laws, greatly hindering natural diversity.

#### This causes Extinction.

Schelske 20 Why managing biodiversity risk is critical for the global economy By [Oliver Schelske](https://www.swissre.com/profile/Oliver_Schelske/ip_bdeb3f), Natural Assets & ESG Research Lead, Swiss Re Institute & [Bernd Wilke](https://www.swissre.com/profile/Bernd_Wilke/ip_567f65), Senior Risk Manager, Group Risk Management Published on:23 Sep 2020 <https://www.swissre.com/risk-knowledge/mitigating-climate-risk/managing-biodiversity-risk-is-critical-for-global-economy.html>

Biodiversity and ecosystem services underpin our daily lives and many of our products and services. From the water we drink to the food we grow and the resources we use in manufacturing, we would be at a loss without Mother Nature. But from the wildfires raging in California to forest loss in the Amazon, it is clear many of these ecosystems are suffering. And as the United Nations points out in the promotion of its [2020 Biodiversity Summit](https://www.un.org/pga/74/united-nations-summit-on-biodiversity/), the COVID-19 pandemic has “further highlighted the importance of the relationship between people and nature”. “We are reminded that when we destroy and degrade biodiversity, we undermine the web of life and increase the risk of disease spillover from wildlife to people,” it says. Understanding the extent and impact of biodiversity and ecosystem decline is key to minimizing further damage, and making informed decisions that prioritise a more sustainable future. This is why the Swiss Re Institute has created the [Biodiversity Ecosystem Services (BES) Index](https://www.swissre.com/institute/research/topics-and-risk-dialogues/climate-and-natural-catastrophe-risk/expertise-publication-biodiversity-and-ecosystems-services.html). It brings together masses of data and research from scientists around the world to present a kilometre-by-kilometre view of the state of biodiversity-related ecosystem services. We can use this information to become more risk-aware, and inform sustainable future development. And this wealth of data for the first time gives insurers the possibility to adapt their future risk pricing, selection and products to reflect the evolving risks caused by the declining health of biodiversity and ecosystems. The insurance industry has begun to realise the impact of climate change and other environmental decline on risk profiles. And it has become apparent that the risks are both physical – for example, the increasing size and amount of pay-outs following hurricanes and tropical storms – as well as reputational. There is now a recognition that coal, oil and gas policies, for example, have an impact on external perceptions. But until now, there has been limited recognition or ability to quantify the changing risk profile of different locations. Swiss Re’s new tool takes us beyond the awareness stage and gives us information we can act on. As Oliver Schelske, environmental and business economist at Swiss Re Institute and co-author of the new study, explains: “Biodiversity and ecosystem services are the foundation for life. They underpin economic activity. Here, we are talking about the health of forests and other ecosystems and the plants and wildlife within them. It impacts processes like water purification, pollination and soil formation. This affects food security, fresh water, and also has cultural, religious, educational and aesthetic importance.” The index paints a grim picture. There are 39 of 195 countries with fragile ecosystems on more than 30% of their land. Among them are Malta, Israel, Cyprus, Bahrain and Kazakhstan. The risks presented by this weakening of the natural world vary country by country. And within countries too. Some economies are more dependent on ecosystem services than others – countries with high dependency on agriculture, forestry and fishing, for example, may be more at risk from a decline in the natural world. These include countries with huge and growing populations like Kenya, Vietnam, Pakistan, Indonesia and Nigeria. But while more diversified economies may feel less of a direct impact, they are far from immune. Everyone is affected by broad socio-economic vulnerabilities like food security and diversity, the ability to discover and develop new medicines, and water quality. The BES Index gives a detailed view of how the interplay of these factors affects the risk in any given location. This makes it possible for the insurance industry to incorporate biodiversity and ecosystem strengths and weaknesses into its risk selection and ultimately pricing in the future. This will make businesses and societies more resilient as they adapt and shift to make better use of resources and locations, influenced by premium prices and insurability. Bernd Wilke, senior emerging risk manager at Swiss Re and index co-author, says: “In the future the tool will allow the insurance industry to adjust and develop products and create nature-based solutions that take account of where in the world, on a square-kilometre scale, ecosystems are healthy or fragile. That information can be used to identify where to invest and where to restore.” He gives the example of property located near damaged mangroves and coral reefs, which might have higher premiums than that behind intact mangroves or reefs. These natural barriers provide crucial protection in areas that are more prone to flooding, erosion and tidal damage, and the tool can help promote identification and investment in them. Using the index can help insurers to not only make communities more resilient and better protected, but also promote the UN Sustainable Development Goals (SDGs) of Life on land, which Wilke says underpins all other SDGs. “If we don’t work with nature in a sustainable way, we don’t have the foundation for our economies and everything that depends on it,” he says. Biodiversity and ecosystem strength are particularly poignant in the midst of the COVID-19 pandemic. In fact, coronavirus could be a sentinel. All over the world, humans and animals are coming into closer contact than ever before. One of the largest potential reservoirs of future zoonotic diseases is in the rainforests of our world. And with deforestation we are making swift inroads into habitats. New roads are bringing greater connectivity to areas previously cut off. In the past, if a new disease was encountered somewhere remote it might have been days before an infected person reached the next tribe. Human expansion into wildlife areas, soaring globalisation and urbanisation, and risky nutrition patterns altogether have led to high-speed routes for future pandemics directly into our major cities. Conversely, making smart use of nature could help increase our resilience during future epidemic or pandemics. Schelske notes, "Sustainable exploration of nature can help us detect new medicine for current or future diseases. We have also seen that proximity and access to green areas in urban neighbourhoods has proven extremely important for mental health during the current pandemic." Like nothing else, the COVID-19 pandemic has created a sense of urgency around maintaining the healthy balance between humans and nature. As we all become increasingly aware of environmental changes, we will have a better foundation of understanding the costs of disrupting this delicate balance and putting a price on this in the future. Acting on this information is key to building a more sustainable and resilient future that benefits everyone.