

CROSSROADS: LEVERAGING A  
GREEN POST-COVID FUTURE

TECHNOLOGY: THE NEW FRONTIER  
FOR SAVING OUR BIODIVERSITY

SURVIVAL: NATURE'S RESILIENCE  
IS A GREAT SOURCE OF OPTIMISM

SUSTAINABILITY

# IMPACT

2020

AN FII INSTITUTE PUBLICATION



**A SUSTAINABLE FUTURE**  
IS WITHIN OUR GRASP

**FII INSTITUTE**  
Future Investment Initiative Institute

Impact  
on Humanity

## FACTS AND FIGURES

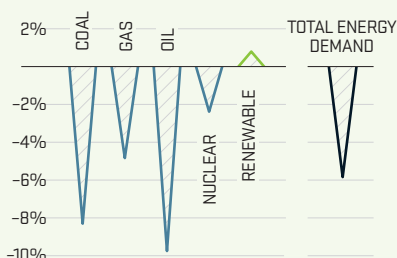
# SUSTAINABILITY

## A DATA OVERVIEW SINCE COVID-19

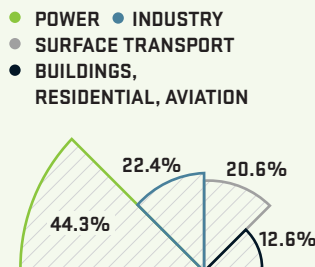
### SUDDEN SLOWDOWN

We explore here how forced global economic inactivity due to Covid-19 has impacted emissions across the planet.

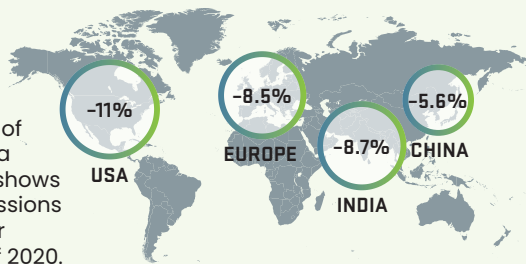
IEA-estimated change in energy demand by fuel relative to 2019.



UEA: global fossil fuel emissions pre-Covid.



University of East Anglia research shows fall in emissions in first four months of 2020.



### OUR GLOBAL FATE IN FOUR NUMBERS

The UNEP Emissions Gap Report regularly monitors progress on climate change.

**1.5** °C – the target threshold temperature rise.

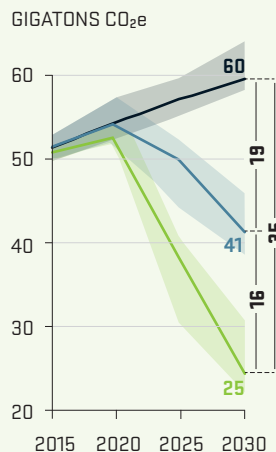
**25** GtCO<sub>2</sub>e – the amount emissions must drop to by 2030.

**56** GtCO<sub>2</sub>e – 2030 emissions with today's commitments.

**7.6** % – the annual emission drop needed up to 2030.

Global greenhouse gas emissions under different temperature-rise scenarios.

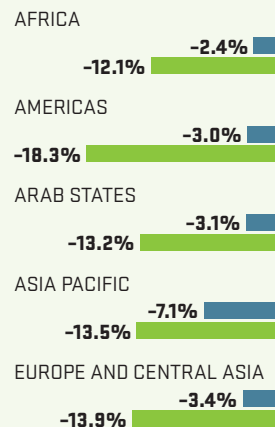
● 1.5°C ● 2°C ● CURRENT POLICY



### JOB LOSS THREAT FROM COVID-19

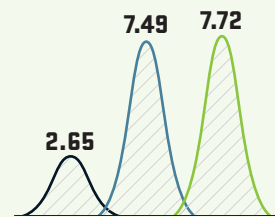
The International Labour Organization has published estimated working hours lost for the first six months of 2020 by region.

● 1ST QUARTER 2020 ● 2ND QUARTER 2020



Oxford University research shows new jobs created per sector for every \$1 million spent.

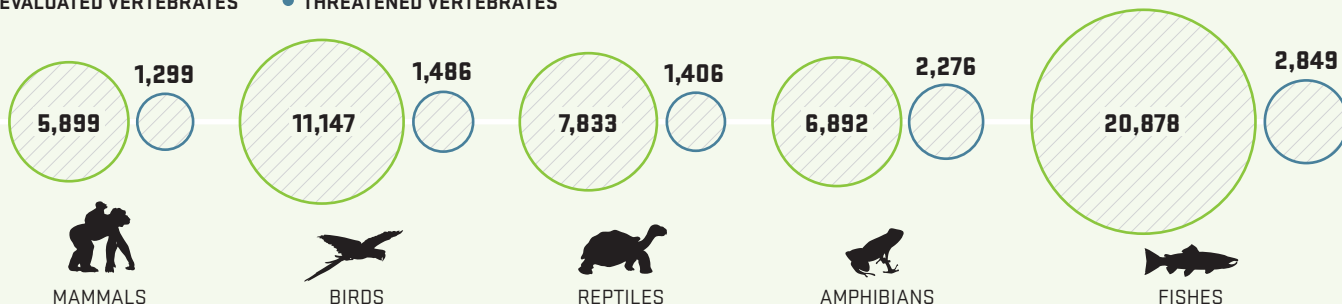
● FOSSIL FUELS ● RENEWABLES INFRASTRUCTURE ● ENERGY EFFICIENCY



### BIODIVERSITY UNDER THREAT

The International Union for Conservation of Nature Red List looks at the number of vertebrates evaluated, relative to those under threat of extinction. These are the latest figures for 2020.

● EVALUATED VERTEBRATES ● THREATENED VERTEBRATES



## EDITORIAL

# NATURE'S CLARION CALL: THE TIME TO ACT



WE PUBLISH THE SECOND IN OUR REPORT SERIES as the world sits at a crossroads, being pulled in two directions. Covid-19 has devastated economies as an estimated 1.6 billion workers globally face threatened livelihoods. Economic recovery and job creation are now a top priority. At the same time, we face a climate crisis that prevents us from firing up those engines of economic growth that have proved so environmentally damaging in the past.

This report reveals a third path, one that leverages job creation, in both the renewable energy sector and green infrastructure upgrades, to meet the needs of today and the future.

We hear from leading experts that a sustainable future is not only about carbon emissions but also includes the development of economies that allow future generations to flourish in terms of their health, education, well-being and environment. At the root of this is the need to fortify the building blocks of our existence, our planet's biodiversity. With one in four species at risk of extinction, we learn how existing innovative technologies are capable of protecting our planet's natural diversity, while facilitating the rejuvenating power of nature.

Along with healthcare, robotics and AI, sustainability is the fourth pillar on which the FII Institute plans to build a brighter future. Join me as we explore how Covid-19 has issued a clarion call from nature, one we fail to heed at our peril.



**Richard Attias**  
CEO, FII Institute

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# A GREEN FUTURE WE ARE AT A CROSSROADS, BUT WILL WE TAKE THE PATH TO COMBAT CLIMATE CHANGE?



**THICK SMOG** giving way to blue skies in Beijing, clear water in the canals of Venice and health-threatening particulates cut by 80 percent in Kuala Lumpur and Bangkok. These were some of the benefits of the forced industrial slowdown imposed by Covid-19. Those placed under lockdown have been appreciating clean air and valuing wildlife as they adapted to less carbon-intensive lifestyles. We are also learning that biodiversity loss is dangerously reducing our resilience to disease (see page 11). However, the tragedy that is Covid-19 may have a silver lining. The pandemic has the potential to herald a profound environmental reset.

The benefits of the economic slowdown are not just experiential. A recent analysis by the International Energy Agency estimates that Covid-19 and the anticipated gradual economic recovery will result in a 6 percent contraction in global energy usage, the largest in 70 years. Global CO<sub>2</sub> emissions are expected to fall by 8 percent – six times larger than the previous record fall that followed the 2009 global recession. It is sobering, however, that these reductions are just a fraction of what is needed to reach the Paris climate targets set in 2015. The United Nations Environment Program estimates that to meet those

targets we need to cut global emissions by 7.6 percent every year until 2030.

## **JOBS A PRIORITY**

The immediate challenge for national governments is how to avoid crippling levels of unemployment. According to the International Labour Organization, 1.6 billion people are at immediate risk of losing their livelihoods worldwide. Around \$11 trillion of fiscal stimulus is being marshalled by countries to address the current global downturn. What is encouraging is that a consensus has quickly emerged among leading international agencies such as the UN and the IMF that this is a unique opportunity to leverage these vast sums not only to create jobs, but also to help to meet the Paris climate targets and the sustainable development goals. Somewhat less encouraging is the disconnect between rhetoric and action.

The economic consultancy Vivid Economics has been analyzing the allocation of fiscal stimuli for 17 major economies and has concluded that in 13 cases environmentally damaging investments outweigh those that help to offset climate change. Among developed economies, the United States is planning \$479 billion of unrestricted investment to be directed into polluting industries just



The India Gate War Memorial in Delhi, obscured by pollution in October 2019 and during a 21-day nationwide coronavirus lockdown.





**8% – the  
amount that  
global CO<sub>2</sub>  
emissions  
are expected  
to fall due  
to Covid-19**

as environmental regulations are being rolled back. China, one of the earliest countries to come out of lockdown, has been keen to make up economically for lost ground. The Helsinki-based Centre for Research on Energy and Clean Air has reported that China has permitted more new coal fire plants for construction in the past six months (17.0GW) than in the whole of 2018 and 2019 combined (12.0GW). “What we are seeing is a lot of economic nationalism, which is understandable at a time when countries have been suffering some unwanted side effects from globalization, but unfortunately it is happening at a time when the imperative for collective action could not be greater,” says Steven Stone, chief of the UN Environment Program, resources and markets branch.

#### EUROPE LEADS THE PACK

There is also positive news. EU leaders have committed to a \$870 billion fiscal stimulus package of which 30 percent has been ring-fenced for spending on green and digital transitions. Allied with the EU Green Deal, which includes a pledge to become climate neutral by 2050, this places Europe in the lead when it comes to a green recovery.

The European stimulus package is based on principles outlined in research by the Nobel prize-winning economist Joseph Stiglitz and the climate economist Nicholas Stern published earlier this year by the University of Oxford. Their study concluded that green initiatives create more jobs, deliver higher short-term returns per government dollar spent and lead to increased long-term cost savings. Examples cited by the report include investment in renewable energy, green retrofits for public buildings, electric vehicle charging networks, flood protection, tree planting, house insulation, bicycle networks and broadband. Many of these suggestions have the merit of being both ready to go and labor-intensive. The European stimulus package also aims to help fund coal-dependent economies such as Poland and Germany to transition out of fossil fuels.





### ➤ SOUTH KOREA ZERO EMISSIONS

In Asia, attention is currently focused on South Korea and its Green New Deal, which is part of a wider economic package designed to stimulate growth following the Covid-19 downturn. President Moon Jae-in has outlined ambitious targets, including a pledge to reach zero emissions by 2050, a phasing-out of coal operations and large-scale investment in renewable energy. Plans are in place to shift to a hydrogen-based economy manufacturing hydrogen fuel cell vehicles, with training to help workers transition into green industries.

Critics point out that in 2017 South Korea was the seventh-largest global CO<sub>2</sub> emitter and the fifth-largest emitter per capita. “You have to appreciate that South Korea has gone from a lower middle-income country to a higher income country over a short period and so has undergone a radical transformation,” says Stone. “I frankly feel that these statements of intent are very welcome because some other countries are not even making gestures in that direction.”

### SOLAR STIMULUS

Other Asian countries trying to leverage a green stimulus include Indonesia, where the government has announced a \$1 billion plan to install solar panels for millions of the country’s poorest households. Named the Solar Archipelago plan, it is expected to generate 22,000 jobs. However, other laws linked to the stimulus will increase land to be mined for coal and loosen permitting controls.

Two years ago, the government of Pakistan announced its 10 Billion Tree Tsunami initiative to try to reverse critical levels of deforestation caused by

felling and natural disasters. Pakistan’s forests only cover 2–5 percent of the land and could be wiped out within 50 years. As part of its Covid-19 recovery package, Pakistan has boosted the initiative by hiring 63,000 more people to plant trees.

According to Stone, one of the key challenges when it comes to creating a green-focused fiscal stimulus is the size of informal economies. “When you talk about 2 billion people globally working in the informal economy you are talking about Asia Pacific and Africa,” he says. “So just doing building retrofits or infrastructure projects is not going to be the solution. Somehow governments need to reach small and medium-sized enterprises, which are dispersed, so one way might be through public procurement and spending

with governments buying things to stimulate local economies.”

### AFRICA’S CHALLENGE

Covid-19 is a double-edged sword for sub-Saharan Africa’s green agenda. Only 43 percent of Africans can access electricity, and reliable electrical supplies are only available in 28 percent of healthcare centers. Covid-19 highlights the need for pan-African cooperation to create sustainable energy supplies. But the pandemic is also distracting resources from the sustainability agenda while jeopardizing much-needed investment in Africa.

Youba Sokona is vice-chair of the Intergovernmental Panel on Climate Change (IPCC) and special advisor for sustainable development at South



# 10 billion

trees are being  
planted in Pakistan to  
reverse deforestation





## “ The imperative for collective action could not be greater.”

**STEVEN STONE**

Chief of resources and markets UNEP



Centre, an intergovernmental think tank on developing countries. He points out that any African green deal has to make development the priority and then look at how it can be achieved sustainably. While solar and geothermal resources in the Rift Valley will be key to meeting Africa's energy needs, it is not the whole solution. Charcoal- and wood-burning are still widely used for cooking, and given the damage it causes to human health, land and the climate, there is a pressing need to find alternative energy sources.

“Our legitimate aspiration is to ensure better living conditions for the majority of people by making sure they have access to food, education and healthcare. Only then can we ask how we can achieve this most sustainably,” says Sokona. “For a real energy transition, we have to phase

out the use of charcoal and firewood, as soon as possible and no later than 2050, which means there is no possibility of going straight to the zero-carbon option. We will, for example, need to use natural gas and liquefied petroleum gas rather than oil, but we should build small-scale gas networks that can be converted to hydrogen when it becomes available.”

One advantage Africa has over the West is that it can leapfrog straight to renewables, particularly solar power, which is most cost-effective in off-grid and mini-grid situations. The same applies to sustainable cities and housing. “We are still using polluting cement factories to build our housing stock, which means having to install air-conditioning when, with innovation, we could be building climate-friendly housing out of local materials,” says Sokona.

Despite the challenges, Covid-19 could herald big changes for Africa. “Regions like Central, Western and Southern Africa coming together over strategic issues around Covid-19 to help build resilience is the opportunity for African states to develop complementary economies that are resilient, sustainable and based on local issues and local perspectives,” says Sokona. ■



The world's largest floating solar farm is in the former coal-mining area of Anhui Province in China.

Over 600 community members planting trees in Pakistan as part of the 10 Billion Trees Tsunami initiative.

## CALL TO IMPACT

**1** States must implement a green fiscal stimulus to create more jobs, deliver higher short-term returns per government dollar spent and increase long-term cost savings.

**2** Special measures are needed to create a green fiscal stimulus for the 2 billion people globally who work in the informal sector.

**3** Pan-African cooperation, developed over the Covid-19 crisis, should be built on to leverage sustainable energy sources for the continent and develop technologies to facilitate sustainable cities and climate-friendly housing built from local materials.

# UNDERSTANDING THE ECONOMY OF LIFE

French economic and social theorist Jacques Attali argues that true sustainability is not just about cutting emissions, but should also focus on the well-being of future generations.

## Impact: How significant is this historic moment in terms of future sustainability?

Jacques Attali: I think it's very important because it demonstrates the global nature of issues. Covid-19 has given us a crash course in global politics and globalization. You can put up barriers and frontiers but you cannot stop the virus, and the same applies for climate change. Also, it shows us that if you want to reduce CO<sub>2</sub> by reducing growth you create another type of crisis around unemployment, health and so on. To cut pollution you need to do more than cut growth, you need to change the nature of production, because it's not growth that is creating CO<sub>2</sub>, it is the production itself. If we have negative growth in 2020, 2021, 2022, the impact on the climate will be minimal because we will not reduce emissions, we will just maintain them.

**Through your NGO, Positive Planet, you are known for your ideas about the positive economy and the economy of life. Can you explain these two concepts?**

→ It has been demonstrated that the sustainable development goals are all interconnected and therefore need to be addressed simultaneously, so I have introduced two concepts. The first is the concept of the positive society. This means a society that considers what is the best way to act in the interest of the next generations. We are learning to be altruistic in terms of pandemic behavior, we also need to be altruistic towards the next generations. The concept of the economy of life is to create a society that takes care of the next generations, to give priority to the sectors that are fundamental for their well-being. It means investing

## KEY CONCEPTS

### POSITIVE SOCIETY:

A society that considers what is the best way to act in the interest of the next generations. The need to be altruistic toward future generations.

### ECONOMY OF LIFE:

To create a society that takes care of the next generations by prioritizing and investing in the sectors that are fundamental to their well-being.

in health, drugs, research, food hygiene, agriculture, education, logistics, digital, distribution, housing, clean energy, water management, waste management, security, culture, media and democracy. At the moment, the economy of life represents 40–60 percent of the GDP of each country. We need to move to 80 percent.

## The problem with measuring GDP is that it fails to account for environmental costs. How do you think we could better measure productivity?

→ Things like donut economics being used in Amsterdam and the circular economy are very interesting, very important. However, I think we need a multi-criteria approach. At Positive Planet we have developed a measurement of which nation's production is going in the right direction, and we rank all the OECD countries accordingly.

## We require a fundamental shift in our economies. What do we do about all the people who currently work in polluting industries?

→ It does not mean we should fire them. We should finance them to be retrained to work in other sectors. All the engineers who are working to produce cars, after a small period of adaptation, could produce electronic devices to address health issues. It's just a matter of governments supporting the transition over two or three years. Just look at the way Britain reorganized its economy during the Second World War to protect democracy. It is a shame we did not adopt a similar approach to tackle Covid-19. There are some countries that did well, mainly South Korea.



“

**Covid-19 has given us a crash course in global politics and globalization.”**



### JACQUES ATTALI

is a French economic and social theorist, writer and political adviser. He was the **first head of the European Bank for Reconstruction and Development**. His NGO Positive Planet has been helping to create positive businesses for 22 years in deprived neighborhoods of France, Africa and the Middle East, and has supported more than 11 million micro entrepreneurs.

**Do you feel that 30 percent of the \$870 billion European stimulus being focused on green measures is enough?**

→ It is insufficient. It should be all of it. It also should not just go on traditionally sustainable industries in the sense of CO<sub>2</sub> production. It should be spent on the economies of life, which should be used as the criteria for judging what kind of investment is needed.

**China's CO<sub>2</sub> emissions are more than Europe's and the USA's combined. What can we do to influence change?**

→ China is the most important coal producer to target because it is producing 28 percent of global CO<sub>2</sub> emissions, so if you

### CALL TO IMPACT

**1** Learning altruism toward the next generation is a key to our sustainability, including developing the sectors that will improve future well-being.

**2** Production methods are more of a threat to the planet's sustainability than economic growth.

**3** Governments must support transition out of the sunset industries to avoid social discontent.

solve China you solve the rest of the problem. It's a matter of give and take. China should understand that with this crisis it has lost its appeal to other countries. To regain its world influence, China needs to be a good world citizen. Before moving to sanctions, soft power is fundamental to the process of persuasion. It is in China's interest because if they do not change, in the end we will not buy Chinese products if the cost is the death of the planet. It will be the same with some Indian and German products.

**Is nuclear energy part of the solution?**

→ Yes, because nuclear energy is CO<sub>2</sub> clean and safe except when

it is mismanaged, as we have seen in Russia or the location of the Fukushima plant. I do not hide the fact that nuclear plants are vulnerable to terrorist attack but that is true for any refinery or other type of plant.

**How optimistic are you about the future?**

→ Take the example of football. If I support a team, I can be optimistic about my team or pessimistic. But if I am a player, it's useless to be optimistic or pessimistic, because I have to play to win. We are not spectators in the game of life, we are actors. Simply asking how optimistic we are is a mistake, as it makes us into spectators and we will lose the game. ■



# HOW DO WE PROTECT THE BIODIVERSITY THAT IS KEY TO HUMAN SURVIVAL?

An endangered mountain gorilla rests in the forest shade in the Virunga National Park. Thanks to the work of conservation groups, they have been saved from extinction and their tiny population has been allowed to stabilize.





PHOTO: PER-ANDERS PETTERSSON/GETTY IMAGES



**WE HAVE BECOME** accustomed to apocalyptic reports about our impact on the world around us, but even so the World Wildlife Fund's (WWF) 2018 Living Planet report made people take notice. Wildlife populations have declined by an astonishing 60 percent since 1970, it said, and humans are driving the planet "to the very brink". But it also struck a note of optimism, saying there has never been such a rapid increase in investment in finding solutions.

Two years on, we were meant to see a ten-year plan of action for halting biodiversity loss agreed at the 2020 UN Convention on Biodiversity (CBD). Instead, we had Covid-19, a zoonotic disease seen by some as "nature's revenge" for our rampant destruction of habitats and ecosystems.

### **SUSTAINABLE DEVELOPMENT GOALS**

Broadly speaking, biodiversity means the variety of plant and animal life in a particular habitat – or the world as a whole – with each species having its own role to play. One of the UN's Sustainable Development Goals (SDGs) is to halt biodiversity loss by 2030. According to the UN, some 1 million animal and plant species are threatened with extinction – many within decades – and the rate of extinction is accelerating, while 7,000 species have been reported in illegal trade, involving 120 different countries.

"We must remember that biodiversity loss actually cuts across all 17 SDGs," says CBD Executive Secretary Elizabeth Maruma Mrema. "There is one goal specifically on biodiversity – goal 15 – but it is relevant to all the other goals as well. Human activity is the main contributory factor to biodiversity loss."

Then there is the untapped potential we are losing – or have already lost. The UN highlights that of 80,000 tree species, we have studied less than 1 percent for potential use, and we still know too little about microorganisms and invertebrates. Despite humans accounting for 0.01 percent of all life on earth, we have already used 75 percent of the land for agriculture, urbanization and industry. ➤



**Despite humans accounting for 0.01% of all life on earth, we have used 75% of the land for agriculture, urbanization and industry.**

“You cannot replace or recreate biodiversity,” says Olivier Rovellotti, CEO of Marseille-based Natural Solutions. “Once it is gone, it is gone forever. It is like burning a library – it contains a certain number of books, and every day we are burning these books. So, we won’t have these nature-based solutions, these medicines, the ingenuity of nature. We are burning science every day.”

As with most things, the impact of biodiversity loss is not being felt equally, with less developed regions paying a higher price. “This is a global crisis, but we also know that the poorest communities in a number of developing countries are the ones that are suffering the most – in West Africa, Southeast Asia, South America,” says Mrema. “They rely on biodiversity for their livelihood, for food security, for medicine. When we look at deforestation in the major forest ecosystems of the world, and what that has led to in the Amazon, in the Congo Basin, in Borneo, it is those local communities, the marginalized vulnerable groups, that suffer more.”



FILE PHOTO: SUSTAINABILITY REPORT 2020



Top: Logging in the Amazon rainforest. Below: Truck hauling timber from the Limbang area of Sarawak in Borneo, home to some of the planet’s richest biodiversity.

### AFFORDABLE TECHNOLOGIES

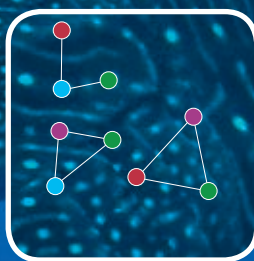
But as the WWF highlighted, while our impact on the planet is increasing, so is our ability to address these issues, with technologies becoming ever more sophisticated, affordable, scalable and user-friendly. Digital technology using GPS and the Internet of Things (IoT) has been harnessed to help track animals and keep them safe from poachers, giving conservationists real-time information on their location and well-being, while open source networks such as the Global Biodiversity Information Facility (GBIF) and eBird are vast and growing sources of worldwide data.

“There is huge potential for IoT projects to mobilize more data – AI is the next big thing in biodiversity,” says Rovellotti. AI’s potential encompasses bioacoustics, satellite imagery and image-processing from camera traps and mobile phones. “For the last ten years we have seen more and more data coming from citizen science projects.”

“The majority of people are carrying sensors in their pockets – in cellphones – and those sensors have allowed us to do conservation with much greater precision,” says Alex Dehgan, CEO of Washington, DC-based Conservation X Labs. Dehgan is also on the board of Wild



Using AI to monitor a whale shark to establish location, migration patterns and even social groups to better understand biodiversity.



“  
**You cannot  
replace or  
recreate  
biodiversity,  
once it’s gone  
it’s gone  
forever. It’s like  
burning down  
a library.”**



**OLIVIER  
ROVELLOTTI**

CEO Natural Solutions

Me, which used AI to create a system for people to upload pictures of whale sharks – a species endangered by the fishing industry – around the world. “They started with an algorithm developed for the Hubble Space Telescope and were able to track animals across entire oceans in a way that no single conservation program ever could,” he says. Two years ago, they also started “scrubbing” every YouTube video for whale shark images, using natural language processing to collect metadata around location and digital bots to ask the people who had uploaded them for more information. At the start of the project, there were about 300–500 whale

sharks known to science – now there are more than 12,000. “So, it is that ability to get leverage, to work at scale,” he says.

#### THE RIGHT MIX

The products of Rovellotti’s company include animal-tracking technology and open source data management platforms aimed at both NGOs and local government, as well as apps to help recognize flora and fauna aimed at individual consumers. It is important to get the right mix of environmental and IT skills in developing AI solutions. “We need to know what to protect, how to protect it, and how to improve. ➤

In Europe we have a lot of impact assessment data, but we do not really have long-term series. That is where we need more data, and for it to be collected more easily, either through citizen science or by using AI and IoT.”

Open source data – shared among countries, organizations and local authorities – is also vital to direct funding where it is most needed. “National parks in Europe are overfunded. The biodiversity level is low, yet you have 50 people taking care of each one, while in Africa or the Amazon you have no one taking care of huge areas, and these are being burned down,” says Rovellotti.

The most ambitious use of technology in the biodiversity field is the Earth BioGenome Project. Described as a “moonshot for biology”, its aim is nothing less than to sequence, catalogue and characterize the genomes of all earth’s eukaryotic species – organisms whose cells have a nucleus enclosed within a membrane. “We are in phase one, doing a representative species from each of the known taxonomic families of eukaryotes,” says the chair of the project, Harris Lewin. “It is a global effort, and we are making very good progress. The flagship project is the Darwin Tree of Life in the UK. They plan to do around 2,000 of the 9,300 known taxonomic families.”

### GAME-CHANGERS

Recent advances in sequencing and cost reduction mean that while the project originally budgeted around \$30,000 per reference genome, that cost is now under \$10,000. Portable DNA sequencers mean that samples no longer have to be taken back to a lab. “This has been a huge game-changer for producing the reference genomes that we need to align other related genomes to,” says Lewin.

Biodiversity solutions must first be practical, says Dehgan. “Conservationists cannot solve the problem by themselves – we need a greater diversity of solutions.” The chief sustainability officer of a major corporation can have global impact at a scale far greater than anything achievable with the limited funding available for conservation, he believes.

“**This is a global crisis, but we also know that the poorest communities in a number of developing countries are suffering most.**”



**ELIZABETH  
MARUMA  
MREMA**

UN Convention  
on Biodiversity  
Executive Secretary



Urbanization is encroaching on nature. Right: Fungi on an agar plate; we have no idea what future medicines we are losing as we destroy our biodiversity.

Greater scrutiny of supply chains is needed, along with more input from experts such as anthropologists, engineers and behavioral economists to help address the challenges being faced in conservation. “It’s not about building new markets, it’s about disrupting old ones, and we need to try to do it with better products,” explains Dehgan.

Some trends already well underway – like cellular agriculture and plant-based meat – could pay real dividends, he says. “That could have a huge impact on our agricultural system, particularly in developed countries. So we need to think about how we create aspirational products that are competitive with – or better than – the products that are least sustainable.”

So, how likely are we to achieve the SDG goal of halting biodiversity loss by 2030? “There are areas where we could improve fairly easily,” says Rovellotti. “The first is cities – we should create more parks and plant more trees. The second is agriculture – we need to use fewer pesticides and adopt nature-based solutions like agroforestry. Cutting down forests in the Amazon and Indonesia to plant soya beans or corn is a disaster – these are hotspots of biodiversity that cannot be replaced.” A third – and promising – area is improving the biodiversity levels of coastal areas by creating artificial reefs.

Large-scale action takes political will. When it comes to spurring policy-makers into action, there has been much talk of





## CALL TO IMPACT

**1** We need to collect more long-term series data and share it widely so that we can target funding where it will do the most good.

**2** We must study the impact of supply chains on biodiversity and make sustainable products more attractive to consumers.

**3** Each of us must play a role because our consumer choices will decide the goods that are produced and their impact on biodiversity.

“building back better” after Covid-19, but it remains to be seen if the pandemic will be a wake-up call or whether we will drift back to business as usual. “I don’t think the public or our politicians are as aware as they should be about the potential for future pandemics as we continue to destroy habitats and come in ever-closer contact with species that we have never been in close contact with before,” says Lewin. “Right now, people are so concerned about a vaccine and effective therapies that very few policy-makers are taking the long view.”

### TIPPING POINTS

If we continue on our current path, we will be losing species that we can’t see and really don’t know, says Lewin.

“With fungi we may be losing things that could be important for drug discovery. In the microbial eukaryotes and marine invertebrates there could be vast potential as well. But I think what we are really missing is a broader understanding of the ecosystems themselves, about how all the species depend on each other and where the tipping points are. Until we know what species are there, we do not know what is critical in those ecosystems that could really affect their survival, and that is why the Earth BioGenome Project is so important.”

What should “building back better” look like? “It is a broad range of policies that is required, on multiple levels,” says Lewin. “Climate change is one big piece, but there are many integrated and

important policy decisions that need to be made if we are going to be successful. With most of the things we’re doing, we are just putting our finger in the dyke until we can understand at a much more fundamental level what is happening.”

“We need to not just build back better, but build a green, sustainable economy,” says Mrema. “Biodiversity is life. From nature-based solutions to sustainable livelihoods to climate change to food security to water security, biodiversity is our basis for a sustainable future. And we need the commitment of everyone – governments, communities, the private sector. Even at an individual level, because what we consume is what will be produced. Each one of us has a role to play, and our choices will be crucial.” ■



# LEARNING FROM NATURE

Speaking to FI Institute CEO Richard Attias, renowned conservationist Jane Goodall warns of the need to respect wildlife and empower the young to achieve a better future for all.

Jane Goodall in the CosmoCaixa Barcelona science museum before giving a talk on her career spanning nearly 60 years.

**Richard Attias:** Before we talk about the planet, what is your reaction to the response by global leaders to the current pandemic?

**Jane Goodall:**

I think the response has been pretty good on the whole. If only global leaders had responded with the same urgency to the climate crisis, we would be in a very different place now. The entire pandemic is very tragic because it is our fault. We have not been listening to the scientists studying these zoonotic diseases that jump from an animal to a person. It is because of our disrespect for the environment and animals that this has come about, we've been destroying the natural world so that animals who normally wouldn't interact get pushed closer together and they get closer to

human beings. As people go into the forest to hunt and capture animals, we are creating a wonderful environment for a virus or a bacteria pathogen to jump from an animal to a person. This disrespect for animals goes further than just hunting, trading and trafficking them around the world. Thousands go to the wild animal meat markets of Asia and other countries and they are in the most terrible unhygienic conditions, never mind the cruelty. Animal species that normally wouldn't interact are close together. Very often, they are killed on the spot, the seller and the buyer can be contaminated with blood, urine, feces, creating the ideal environment for a virus to hop over from one animal to one person.

**What makes this crisis a unique opportunity to put us back on a sustainable track?**

## JANE GOODALL

is an **ethologist and conservationist** who observed the behavior of wild chimpanzees in Gombe for a quarter of a century. She has a PhD from Cambridge University and has **many awards** for services to wildlife conservation. The **Jane Goodall Institute** aims to build on her chimpanzee research, while **Roots & Shoots** is a youth-driven network empowering and inspiring young people of all ages to become involved in hands-on programs for their community, animals and the environment.

→ Many, many people have contacted me to say they found it so wonderful to hear birds singing in the city or to experience clean air. People say they don't want to go back to the old ways, but this isn't easy, especially with some of today's world leaders just longing to get back to business as usual. We have got to realize that unlimited economic development, on a planet with finite natural resources, doesn't make sense, especially when some of those resources have been used up more quickly than nature can replenish them. At the same time, our human population is growing, 7.2 billion of us today, predicted to be 9.7 or even 10 billion by 2050. How will the planet cope? I think we need a new definition of success. Must success always be the accumulation of wealth and material goods? Must we have this





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We have  
not been  
borrowing  
our  
children’s  
future, we  
have been  
stealing it.”



**DR. JANE  
GOODALL, DBE**

Founder – the Jane  
Goodall Institute and  
UN Messenger  
of Peace

[www.janegoodall.global](http://www.janegoodall.global)  
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Don't Forget Our Planet! - FII Institute Series



New York City, New York, United States  
**Mr. Richard Attias**  
CEO of Roots & Shoots



Bournemouth, United Kingdom  
**Dr. Jane Goodall PhD, DBE**  
Founder of the Jane Goodall Institute, a UN Messenger of Peace

Above: Jane Goodall shown living with chimpanzees in Gombe Stream National Park, Tanzania in 1965.

Below: FII Institute CEO Richard Attias and Jane Goodall speaking in June at the virtual conference Don't Forget Our Planet.

materialistic outlook? Must we lose all kinds of spiritual connections with the natural world?

### What is your definition of success?

→ I think a successful person is one who achieves what he or she wants to achieve. Of course, sometimes that means lots of money. So, we have to say that is success for that person. I'm trying to think of a different measure of success, which is to obtain what you want that makes you happy, where you bring happiness to your family and your friends, where you can enjoy each day and not always be worrying about the bottom line. A more peaceful, more relaxed way of living. I know many people in the Global

## CALL TO IMPACT

**1** We must apply lessons learned from our approach to tackling Covid-19 when it comes to the challenge of climate change.

**2** Empowering the young is key to creating a more sustainable future as they have no desire to repeat the mistakes of the past.

**3** World leaders must first consider the impact on our children and grandchildren before making decisions about the future.

South who have a very different way of living to us in the Global North.

### How do we make sure that the young have a voice in how we reshape our recovery?

→ It is important we listen to and respect the young. Once you empower them it is unbelievable how they tackle the problems in the world around them. The main message of Roots & Shoots is that every day we live, we make some impact on the planet and we have a choice as to the kind of impact we make. We need to break down the barriers that we have built between people of different nations, people with different languages, different cultures, different religions.

Young people are beginning to understand that far more important than the color of your skin is the fact that when you fall and hurt yourself, the blood is the same, the tears are the same, we are one human family. There is a saying: “We haven’t inherited this planet from our ancestors, we have borrowed it from our children.” We have not been borrowing our children’s future, we have been stealing it and we are still stealing it today. By empowering the young we can look forward to a much better world because they don’t want to get back to the old way of doing things.

### What is your call to action to the G20 leaders who will meet in November?

→ We really need to think how we interact with each other and with nature. I can make some small difference each day, but the G20 leaders can make a huge difference. So, I would beg those leaders, as they make decisions about the future, to think of their children and their grandchildren. To think of all this beauty that’s on our planet that we are destroying, to think that by destroying the forests, we are destroying the most important way of mitigating the effects of climate change. We need to think about our own environmental footsteps and try and encourage others and try not to be selfish. It was Mahatma Gandhi who said this planet can provide for human need, but not for human greed. That’s what has been going wrong. But, we can all do something about it, every single one of us, and some people can do far more than others. ■

This is an edited interview from the FII Institute virtual conference Don't Forget Our Planet held in June 2020.

# A NATURAL SOURCE OF OPTIMISM

The biodiversity that is vital for all our well-being is eroding at an alarming rate. Jon Paul Rodríguez, Chair of the Species Survival Commission of the International Union for Conservation of Nature (IUCN), looks at what will motivate us to make change and the technologies that can help.

## Impact: Why does biodiversity matter?

Jon Paul Rodríguez: Everything we eat, everything we drink, the air we breathe comes from biodiversity. We are very closely connected to all other species. We depend on them and they depend on us. But for me that is only the pragmatic perspective. From a personal point of view, seeing animals and plants around me makes me feel good. I spent a lot of time in nature as a child, and that triggered a lifelong love.

## According to the IUCN Red List, more than 32,000 species are currently threatened with extinction. How bad is the crisis?

→ Species have been going extinct forever, so people ask why we should worry about it now. The answer is because it is happening at a much higher rate. Fossil records tell us what we call the background extinction rate: one species per million species per year on average. Currently it is about one thousand times higher.

## What are the principle causes?

→ One cause is over-exploitation, meaning we use a species more than it is able to regenerate. Another is habitat destruction through industrialization, urbanization and agriculture, and a third is invasive species. Most of the extinctions we have seen on islands are closely linked to invasive species. Small birds or insects are typically threatened by habitat destruction. Bigger species like whales, tigers or elephants are heavily impacted by over-exploitation.

## What is the biggest hurdle to dealing with biodiversity loss – do we lack knowledge, resources, policies or will?

→ It's a mix of all these things. There have been lots of attempts over the last decades to explain why we should do conservation, and I often use economic arguments around the value of biodiversity to convince people. But ultimately I think it is a personal choice about the world you want. The mathematical

ecologist, Robert May, used to say, "sure, there will be life on Earth in 100 years – there's no question about that – but would you like to live on that Earth?" That's the right question. We will be able to live in a more homogenized world. Maybe there will be more pandemics that wipe out populations. It will be different, but it will have life. It's our choice how we want to shape the future.

## How does the IUCN contribute to solving these challenges and what is your role?

→ I represent the Species Survival Commission within the IUCN. It is a global network of nearly 10,000 experts from 174 countries. Our main role is to provide the evidence base for conservation decision-making and to guide conservation policy. Historically, it was very Eurocentric. But we are diversifying our leadership to include more people from the regions where the species live and we are trying to identify emerging leaders, too. Social sciences and communications have both become a bigger part of what we do. We work with zoos, aquariums and botanical gardens. Those organizations are experts in dealing with the public and communicating and creating awareness.

## How do attitudes toward conservation and nature vary around the world?

→ Opinions about conservation as an idea are generally positive around the world, but the reality of conservation on the ground can be much more complicated. Attitudes towards wildlife depend on culture and on how communities benefit from conservation. For example, Asiatic lions are widely tolerated



by local communities in the Gir forests in Gujarat, India, whereas in many other parts of the world there can be strong retaliation to human-wildlife conflict events.

### What are the big conservation issues in your home country?

→ Modern Venezuela was built on the extraction of oil and minerals, so our perspective on nature is very influenced by mining – nature is a resource from which you extract the things you need. This also influences our relationship with animals. If you see someone selling a parrot on the road, the

reaction is typically tolerant – if people are poor, they have to sell something to live.

### Citizen science is making an increasing contribution to conservation – what is driving this?

→ There is something incredibly powerful about the cell phone. I'm a big fan of the apps iNaturalist and eBird. You take a picture with a georeference and send it to the cloud where the image is then identified by experts. Those data sets are then fed into the Global Biodiversity Information Facility. That means everyone can contribute



### JON PAUL RODRÍGUEZ

is Chair of the Species Survival Commission of the IUCN, where he has held various roles since 1991. He is also **founder of Provita**, an organization in Venezuela that strives for innovation in conservation, with emphasis on threatened species and ecosystems.

to the data that supports decision-making at the global level. Early in my career, the only valid biodiversity data reference was a plant or animal specimen in a flask in a museum. That was the only way to prove the identity of what you had observed. Today, most records on GBIF come from iNaturalist. The power of a distributed network of citizens is huge. I see a lot of potential for that to grow in the future.

### What other technologies are changing the way we do conservation?

→ Remote sensing and satellites have completely changed the way we look at land cover. Some satellites can even go just under the water and see what is happening with coral reefs. With environmental genomics you can take a sample of water from a river and tell from the environmental DNA present what was swimming in that water. Genetics has also made it easier to control the illegal trade in species – it is much harder to lie about where they

“  
I derive my  
optimism from  
seeing the  
capacity  
of nature  
to recover.”



A marine biologist in French Polynesia performing genetic analysis of corals

“  
**Genetics has made it easier to control the illegal species trade.**”



➤ come from. But the biggest change is that these tools are free to use. When I started my career, a satellite image cost thousands of dollars. Now you can download the whole catalogue of Landsat for free.

#### Which emerging technologies are you most excited about?

→ I always take a step back when I look at these things. For example, in the IUCN world we produce a lot of data sets and yet they are not really connected. What I hope to achieve in my role is to have these different tools integrated. It's not very cutting-edge. But sometimes we are distracted by exciting new tools and leave behind the building blocks. Imagine a huge cloud-based website with all these data sets integrated in a systematic way and anyone in the world can access them and extract the data they want –

whether it's for their country or their back yard. We're moving toward that, but we aren't there yet.

#### How effective is biodiversity offsetting or putting an economic valuation on ecosystems and natural capital?

→ Both tools fulfil a purpose and are important but ultimately what is driving the private sector and governments toward conservation is pressure from the public. I see more creativity, originality and forward thinking from subnational governments because they are more directly connected to their constituencies and more prepared to experiment and try different approaches. That's the same for the private sector, too. They are much more nimble than national governments or international organizations.

### CALL TO IMPACT

**1** As well as thinking about the economic value of natural capital, we should all ask ourselves what kind of planet we would like the Earth to be in a hundred years.

**2** Technology should be used to solve challenges like integrating all the data sets we have and making them available to everyone.

**3** We must bring in people from a greater diversity of geographies, backgrounds and disciplines to work in conservation. And we need to give bigger roles to younger people.

#### Are you optimistic that we can achieve the UN Sustainable Development Goal to halt biodiversity loss by 2030?

→ I derive my optimism from seeing the capacity of nature to recover. Given a chance it will bounce back. Of course, there is no way to recover an extinct species. For example, when I was at university here in Caracas we had a national park nearby with a road crossing it. The road collapsed because of heavy rains and was closed for several months. Within three months you could not see the road anymore. It was reclaimed by the forest. With Covid-19 there have been lots of examples of animals showing up in places we haven't seen them before, like whales jumping in coastal bays normally busy with shipping. Once you give nature a chance, it comes back. That's the reason why I am hopeful. ■



# Future Investment Initiative

In its fourth consecutive year, the Future Investment Initiative (FII) is organized under the leadership of HRH Prince Mohammed bin Salman bin Abdulaziz, Crown Prince, Deputy Prime Minister, Chairman of the Council of Economic and Development Affairs and Chairman of the Public Investment Fund, and the **Future Investment Initiative Institute**.

Following the official launch of the FII Institute on April 23, 2020, the FII event platform will enable our community of influential global investors, business leaders, innovators, and policy-makers to engage with the institute, its four impact areas, its governance and its leadership.

FII will continue to serve as a vital platform for understanding how global investment can drive economic progress, environmental sustainability, and a positive future for humanity. In the lead up to the G20 Leaders Summit, FII provides a platform to make formal recommendations to the G20 Secretariat, unparalleled networking among CEOs, world leaders and experts, and lively conversations at the forefront of investment, business, economics and policy.



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# THE FUTURE IS BRIGHT

## THE FII INSTITUTE LEVERAGES PARTNERSHIPS TO BUILD A BRIGHTER FUTURE FOR ALL AND WITH ALL.

**THE FII INSTITUTE** IS GUIDED  
IN ALL IT DOES BY A STRONG  
PURPOSE, VISION AND  
MISSION.

**OPTIMISM** is the most sustainable resource we have. It is the force by which we can create a new reality, and it is more in demand than ever before as we face the challenges of a global pandemic, climate change and biodiversity loss.

In this report we have looked at the risk of rising temperatures and the impending threat to our biodiversity. We have also explored how Covid-19 is being used worldwide to leverage change for a more sustainable future, and how pioneering technology is enabling us to protect our rich natural diversity.

It is in this spirit of optimism that the FII Institute will approach the four



### PURPOSE

"Enabling a brighter future for humanity"



### VISION

"Empowering the world's brightest minds to shape a brighter future for ALL, and with ALL"



### MISSION

"Curating and enabling ideas to impact humanity sustainably"

subject pillars that we believe should form the basis of a better future. Our initial focus is on healthcare, sustainability, artificial intelligence and robotics – all subjects to be explored in future FII Institute reports. The FII Institute is establishing itself as a new generation of not-for-profit foundation, dedicated to empowering the world's brightest minds. We plan to consult the world's leading thinkers and forge partnerships with governments, businesses, academia and civil society to achieve our mission of **curating and enabling ideas to impact humanity sustainably.** ■



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We believe the  
Carbon Circular  
Economy will  
provide the solution  
to achieving  
economic prosperity  
and mitigate  
energy poverty.”

#### HRH PRINCE ABDULAZIZ BIN SALMAN AL-SAUD

Minister of Energy of the  
Kingdom of Saudi Arabia

### CARBON CENTRAL TO RIYADH G20

At the FII Institute conference Don't Forget Our Planet in June, HRH Prince Abdulaziz bin Salman Al-Saud, Minister of Energy of the Kingdom of Saudi Arabia, announced that the development of the **Carbon Circular Economy (CCE)** would be a central theme at the meeting of G20 countries to be hosted in Riyadh in November this year. The aim of the CCE is to “reduce, reuse, recycle and remove” carbon emissions to help restore balance to the carbon cycle. As part of this ambition **Saudi Arabia plans to generate 50 percent of its energy from renewables** such as wind and solar by 2030.



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#### SOURCES

#### Overview of key sources used for this report

##### A GREEN FUTURE

#### IEA Global Energy Review

<https://www.iea.org/reports/global-energy-review-2020>

#### CREA Coal Boom in China

<https://energyandcleanair.org/wp/wp-content/uploads/2020/06/A-New-Coal-Boom-in-China.pdf>

#### Vivid Economics Index

<https://www.vivideconomics.com/casestudy/greenness-for-stimulus-index/>

#### HOW DO WE PROTECT BIODIVERSITY?

#### WWF Living Planet Report

[wwf.panda.org/knowledge\\_hub/all\\_publications/living\\_planet\\_report\\_2018/](http://wwf.panda.org/knowledge_hub/all_publications/living_planet_report_2018/)

#### UN Sustainable Development Goals

[www.un.org/sustainabledevelopment/sustainable-development-goals](http://www.un.org/sustainabledevelopment/sustainable-development-goals)

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PREDICTING A PANDEMIC  
LIKE THIS FOR SO LONG  
NOW. IT’S BECAUSE OF  
OUR DISRESPECT FOR  
THE ENVIRONMENT AND  
ANIMALS THAT THIS  
HAS COME ABOUT.”**

**DR. JANE GOODALL, DBE**  
FOUNDER – THE JANE GOODALL INSTITUTE  
& UN MESSENGER OF PEACE